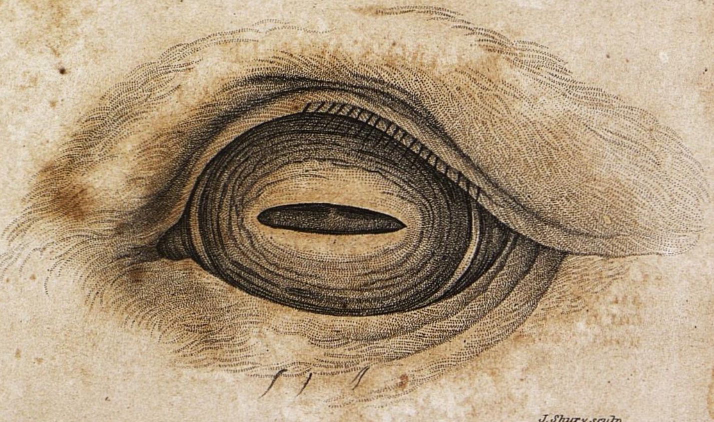
PLATE I. To face Title.

Fig. 1.

Fig. 2.



J. Shury sculp.

COMPENDIUM

OF

THE VETERINARY ART,

CONTAINING

PLAIN AND CONCISE RULES

FOR THE

TREATMENT OF ALL THE DISORDERS AND ACCIDENTS TO WHICH THE HORSE IS LIABLE;

WITH

OBSERVATIONS ON GROOMING, FEEDING, EXERCISE,

AND THE

CONSTRUCTION OF STABLES.

ALSO,

A BRIEF DESCRIPTION OF

THE STRUCTURE, ECONOMY, AND DISEASES OF THE HORSE'S FOOT,

WITH THE

PRINCIPLES AND PRACTICE OF SHOEING.

BY JAMES WHITE,

Late Veterinary Surgeon of the First, or Royal Dragoons.

THE FIFTEENTH EDITION.

LONDON:

PRINTED FOR LONGMAN, REES, ORME, BROWN, AND GREEN; BALDWIN AND CRADOCK; J. BOOKER; WHITTAKER, TREACHER, AND ARNOT; T. TEGG; SIMPKIN AND MARSHALL; HURST, CHANCE, AND CO.; J. DUNCAN; AND W. JOY.

1829.

C. Baldwin, Printer,
New Bridge-Street, London.

TO HIS ROYAL HIGHNESS,

FIELD MARSHAL,

THE

DUKE OF YORK, K. G.

Commander in Chief of His Majesty's Forces,
&c. &c.

Sir,

Your Royal Highness was graciously pleased to patronize the first Publication of this little Volume, and so favourably has it been received by the public, that a fourteenth edition is now published. Snch encouragement could not fail of inducing me to continue my attention to the subject; and to do every thing in my power for the improvement of the Veterinary Art. The result of my labours is now offered to the public, and I venture to indulge a hope, that this improved edition will be

honoured with your Royal Highness's approbation.

I am, with the most profound respect,

Your Royal Highness's

Most devoted, obliged,

And humble servant,

JAMES WHITE,

Late Veterinary Surgeon to the First, or Royal Dragoons.

PREFACE

TO THE

THIRTEENTH EDITION.

About two years only have elapsed since the twelfth edition of this small volume was published: such kind encouragement cannot fail of increasing the Author's ardour and industry in the cultivation of his profession; and he trusts, by continued and zealous attention to Veterinary practice, to make still further improvements beyond those he has now to offer. In the last edition I gave some account of Veterinary writers, especially those of the French nation. I have now to pay some tribute of respect to the memory of those of our own country, who have written many works of great utility, though not what are considered scientific performances; as well as a short account of the works of living Veterinary authors.

The earliest English writer on Farriery, we have an account of, is Mascal, who lived in the reign of Edward the Sixth. He published a treatise

on Farriery, which was greatly esteemed, and passed through several editions. At the same time lived Martin Clifford, who also wrote a treatise on Farriery; but it was not considered of any value, and passed through two editions only. Next to him appeared Captain Burdon, of the Dragoons, who published a very small Treatise on Farriery, which was universally read and esteemed in the reign of Queen Elizabeth. This small work was republished, with notes, by Dr. Bracken. Three years after appeared Gervase Markham, the most renowned of ancient Farriers. He published a work under the name of Markham's Masterpiece, in the year 1666; it passed through 25 editions, the last of which appeared in 1729. He was in practice more than 60 years. In the year 1740 De Grey published his Compilation on Farriery, which was not much esteemed. Snape, Farrier to King Charles the Second, published the first English Treatise on the Anatomy of the Horse; but it was taken in great measure from Ruini, an old Italian author of great merit. In the year 1770 Sir William Hope published a translation of Solleysel's work, which was much read and esteemed. In the reign of King George the First, Dr. Layard published an account of a dreadful epidemic which raged among Cattle; but it proved of no value. The

nature of putrid disorders was not then understood: they were not known to be, as they now have been proved, highly inflammatory at their first occurrence, and curable only by *copious bleeding and purging*. Nothing else ever can do any good. Other publications of a similar nature appeared about the same time. In the year 1750 appeared the best book on Farriery that had ever been written, by William Gibson, a surgeon. It went through many editions, and is still considered valuable. About the same time Dr. Bracken published two volumes on Farriery, which were greatly esteemed, and are still read. Bartlett's Gentleman's Complete Farrier next appeared. He published also a Veterinary Pharmacopœia The former was in great measure an abridgment of Gibson. It contained, however, a new method of nicking, and a description of Lafosse's supposed cure for the glanders. Osmer next published a Treatise on Lameness; containing many new and useful observations: also, a Description and Recommendation of Lafosse's Half-moon Shoe: a shoe that I do not consider proper on any occasion whatever; because, with such a shoe, the heels are constantly wearing, while the toe is growing, which must be a great injury to the flexor tendon, or its appendages, and cause the frog to receive more pressure than it was designed for. He after-

wards wrote a book on an Epidemic Disease that prevailed, which contained many useful observations. In the year 1780 Mr. James Clark, of Edinburgh, published a small work on the Prevention of Disease by Exercise, Feeding, Bleeding, &c. This is an excellent work, and may be still read with advantage by Veterinary students. Lord Pembroke, about this time, published a work on Horsemanship; which contained many sensible observations on the diseases of horses and on shoeing. His Lordship was Colonel of the First, or Royal Dragoons; and had the horses of his regiment shoed according to a plan of his own. This plan was continued while I was in the regiment, and is, I believe, still in use. This shoe is that which I now recommend for good feet. About the year 1789 Mr. Taplin's Stable Directory appeared; a book that was much read, and passed through many editions in a few years. A supplementary volume was afterwards published, and a small pamphlet, named, not very justly, Multum in Parvo. In the year 1792 the Veterinary College was established, and M. Saintbel, a French Veterinarian, was appointed Professor. He died about a year after. Saintbel was the person who discovered that glanders was communicated through the medium of the stomach. A few years after his death a quarto volume appeared on veterinary

subjects, with his name to it; but it contained nothing of importance. The Professorship of the College was afterwards filled by Mr. Coleman and Mr. Morecroft, jointly; but the latter soon gave it up for a more lucrative situation, as a private practitioner in Oxford-street; in which he acquired the highest reputation. In 1807 he was induced to go out to India, to superintend the breeding stud of the East India Company. He published a small but very useful book on Shoeing. I should have noticed before a small book by Mr. Prosser, a surgeon, on Strangles and Fever, in 1786. Mr. Prosser proved that the strangles could be, with certainty and advantage, communicated to colts by inoculation. (See *Strangles.*) In 1796 a quarto volume appeared on the Economy of the Horse's Foot, and Shoeing, by Mr. Freeman, a gentleman much celebrated for his knowledge of horsemanship; on which he afterwards published a large treatise. The former work contains some good plates of the different parts of the horse's foot. About the year 1800 Mr. Coleman published his splendid work on the Structure, Economy, and Diseases of the Horse's Foot, and Shoeing. This work contained many beautiful and accurate plates of the horse's foot. There afterwards appeared one volume of Veterinary Transactions; and a pamphlet, describing an Arti-

ficial Frog, by the same author. About this time two octavo volumes were published, entitled, A Philosophical Treatise on Horses, by Mr. John Lawrence. The first volume merits particular notice: it contained a forcible appeal to the feeling of the public in support of the *rights of horses*, and ought to be read by all horse proprietors. The other contained much useful practical information; but, as Mr. Lawrence was not a regular student of the veterinary profession, it of course contained some errors, and is valuable chiefly as a compilation. In the year 1801 Mr. Richard Lawrence published a quarto volume on some of the Diseases of the Horse, with some useful and accurate plates. This is a work of considerable merit, and has been since published in one octavo volume. Mr. Blaine's work first appeared in 1802 or 1803, in two volumes octavo. It has since been published, however, in one octavo volume. It is the only regular system of veterinary medicine that has been attempted in this country; and, notwithstanding the severe remark of Professor Girard and M. Jauze on it, I think the work much more valuable than that of the latter author, although his large quarto contains more than a hundred plates; and of equal value to M. Girard's works, not excepting his Traité du Pied. About this time appeared a book by Downing, and another

by Topham, on the Diseases of Cattle. Clater's "Every Man his own Farrier" had been published some years before; and about this period appeared his volume on the "Diseases of Cattle." A quarto book on Cattle Medicine was published soon after by Mr. Skerrett; which contained some good representations of the calf in utero, and some useful observations on the subject. But one of the best books that have ever appeared on Cattle Medicine was by Mr. John Lawrence. The great merit of this work consists in pointing out the propriety of attending to preventive measures, and the absurdity of incurring the useless expense of inert or poisonous drenches, and of attempting to cure incurable diseases. In 1803 a quarto volume by Mr. Feron appeared, which contained nothing valuable. It has since appeared in an improved state in one large octavo volume. About the year 1804 Mr. Riding, of the Twenty-eighth Dragoons, now of the Royals, published his Veterinary Pathology; and Mr. Denny, of the Tenth Dragoons, his Treatise on the Diseases of Horses; both small octavos, and of considerable merit. In 1805 a large quarto Dictionary appeared, by Thomas Boardman, of the Third Dragoons. This book contained some good plates, reduced from Stubbs, and is altogether a valuable compilation. In 1809 Mr. Bracey Clark published

his Dissertation on the foot of the Horse. This is the best work on the subject that has appeared in any language. He has since published another work, named Stereoplea, of great merit; and a Treatise on Colts: also, an Essay on the Flatulent Colic, showing that it depends on indigestion. About two years ago Mr. Goodwin, Veterinary Surgeon to the King, published an octavo volume on Shoeing, and the various methods practised by foreign nations. He recommends an improvement on the French mode of shoeing, which, he says, has been found extremely useful. As the book will no doubt be generally read, no further description is necessary.

In addition to the French Veterinary Works noticed in the preface to the twelfth edition, the following have since appeared:

1. Traitement pour toute espèce de Maladies des Chevaux. Par M. Desmarè.

2. Extrait d'Abrégé de Médecine Veterinaire Pratique, publié en Italien, 1813. Par J. P. Volpi.

3. Tableau Indicatif des Maladies du Cheval, et des Remèdes qu'on peut appliquer selon les Maux et Accidens. 2 feuilles, folio.

4. Pathologie Veterinaire. Par M. Dupuy.

M. Jauze's promised work in five octavo volumes has not yet appeared.

In concluding this preface I think it necessary to observe, that in the present edition I have not given many receipts for medicines; but these have been so abundantly supplied in the last edition of the second volume, or Materia Medica, that I thought it better to let them give place in this volume to what I considered more useful matter.

In the last edition of the third volume it is stated that the nerve operation was not discovered by Mr. Sewel, but by Mr. Coleman. This, however, I have since found to be a mistake, and therefore take this opportunity of retracting it.

PREFACE

TO THE

TWELFTH EDITION.

NEARLY twenty years have elapsed since this work was first published, and during that time eleven very large impressions have been sold. So favourable a reception could not fail of stimulating the author to continued and increased exertions for the improvement of veterinary science, and leading him to consider it as a duty he owes the public, to communicate, when opportunities offered, any useful discoveries that may come to his knowledge, whether the result of his own experience, or that of others. The present edition is called for at a favourable time, as the ready intercourse we now have with the Continent enables him to give a short account of the state of the veterinary art in foreign countries, particularly in France; where it attracted the notice of scientific men, and where veterinary schools were established at an earlier period than in any other country. Bourgelat, the first director and the principal projector of the French veterinary schools, has been justly regarded as the founder of the veterinary art; being the first who placed in a clear point of view the indispensable necessity of anatomical and physiological knowledge to the veterinary practitioner. Several works were published by Bourgelat on veterinary subjects, which are still held in considerable estimation: the principal are "A Treatise on the Anatomy of Domestic Animals;" "A rational Materia Medica;" "A Treatise on the Exterior Conformation of the Horse;" "Essays on the Theory and Practice of Shoeing, and on Bandages,"

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&c." Bourgelat's 'Anatomy' appeared first in 1769, and has passed through several editions. It was translated into German, Italian, and Spanish. Though Bourgelat was the first to place the veterinary art on a proper foundation, some attempts were made, at a much earlier period, to diffuse a knowledge of veterinary anatomy, the principal of which was by Ruini, an Italian. This work was published at Venice in 1598, and entitled, "Anatomia del Cavallo; infermità, et suoi rimedi: dal Signor Carlo Ruini, Senator Bolognese." It treats of the anatomy of the horse as well as of diseases. This book seems to have been the groundwork of many others that were published at different periods afterwards, particularly the anatomical part and the plates, which appear to have been almost literally copied by all of them. Vitet, in his "Analysis of Veterinary Works," in speaking of Solleysel's, which was published in 1698, says, "In the 16th century, many veterinary books appeared, but Solleysel's work has caused them to be forgotten; nor have we reason to regret their loss, as they contained only a very imperfect description of the structure of the horse." It appears, however, that Solleysel's celebrated work is in great measure copied from that of Ruini. Snape's Anatomy of the Horse, and the little that Gibson wrote on that subject, seem to have been drawn from the same source. One difference is observable in the plates; those of Ruini being engraved on wood, and his imitator's on copper. La Fosse was contemporary with Bourgelat, and communicated several memoirs on veterinary subjects to the Royal Academy. In 1766, La Fosse's son published his Farrier's Guide, which treats also of the anatomy of the horse; and in 1772, his "Cours d'Hippiatrique" appeared,

a splendid folio, containing sixty-five highly-finished plates, illustrative of the anatomy of the horse. In 1775, a "Dictionary of Farriery" was published by the same author, in 4 vols. 8vo. This work contains much useful information. In 1771, Vitet's "Veterinary Medicine" appeared, in 3 vols. 8vo. This work treats of the structure of the ox as well as the horse. After the revolution, the art seems to have made but little progress. In 1797, a useful pamphlet on the glanders appeared, the joint production of MM. Chabert and Huzard. This book was printed and distributed by order of the government, in consequence of the great number of horses that had been lost, and the contagious nature of the disease. It does not contain, however, any information that would be new to the English reader. About the same time, M. Chabert published "A Description of the Digestive Organs of Ruminating Animals;" and soon after, there appeared "A Manual of the Veterinary Art," by La Fosse, son of the author before noticed, in one 12mo. volume. This practical compendium of the veterinary art seems to have been much esteemed, as a third edition was published in 1803. From this work, as well as from others of a more recent date, it appears that the practice of veterinary medicine has not made much progress in France since the time of Bourgelat. In 1811, an account was published of some successful experiments on the treatment of Glanders and Farcy, by M. Collaine, professor of the Royal Veterinary School of Milan. The successful remedy in these experiments was sulphur, given in very large doses, beginning, however, with four oz. and gradually increasing the dose, until it caused purging and violent colic. It was then discontinued until these symptoms ceased. On repeating it afterwards, it

was found that much larger doses could be given without inconvenience. In some cases, it was given to the extent of two pounds, in the course of the day, made into an electuary with honey. It is stated, that a considerable number of horses were thus cured. Besides giving the sulphur, about two quarts of blood were taken off every third or fourth day during the treatment. The following statement is annexed to the pamphlet:

"The veterinary surgeon attached to the imperial breeding stud of Borculo, in Holland, has practised M. Collaine's mode of treatment; and, after two months' trial, thirty glandered horses were perfectly cured, ten are in a state of convalescence, and twenty have died during the treatment." Notwithstanding the boasted efficacy of this mode of treatment, it appears from a recent publication on Glanders, by M. Dupuy, that it has been fairly tried at the Veterinary School at Alfort, and has not, in a single instance, succeeded. M. Dupuy's work appeared in 1817, in one volume, 8vo. and treats of glanders as a tubercular or tuberculous affection, having for its title, "De l'affection tuberculeuse, vulgairement appellée Morve (glanders), Pulmonie (consumption, or phthisis), Gourme (strangles), Fausse Gourme (spurious, or bastard strangles), Farcin (farcy)." Some observations on this work will be found in the Appendix, under the head *Glanders*. The most valuable work that has appeared in France, since the revolution, is, "A Treatise on the Anatomy of Domestic Animals," by Professor Girard, 1807, 2 volumes, 8vo. In 1813, there appeared "A treatise on the feet, &c." by the same author, in one volume, 8vo. with six plates, illustrative of the anatomy of the foot, not only of the horse, but of the other domestic animals, and poultry: this also, is a work of considerable merit.

In 1817, the first part of a theoretical and practical treatise on the horse's foot and on shoeing was published, under the title of "Cours Theorique et Pratique de Maréchalerie Veterinaire, par F. Jauze." This work was completed in 1818, and forms one large 4to. volume, with no less than one hundred and ten plates! M. Jauze announces another work as about to be published in five volumes, 8vo. with numerous plates. This work is said to treat of the internal and external pathology of the larger domestic animals, the veterinary Materia Medica, and the veterinary jurisprudence. "Every article in this Treatise," the author says, "will be described with particular order and precision, and *nothing superfluous* will be found in it." If we may judge from the work already published, and the number of volumes announced, it seems probable that the readers of the work will be of a different opinion. The introduction to his *Cours de Maréchalerie* consists of an enumeration and short description of the works that have appeared from the earliest times on the art of shoeing; and among these, the ingenious and valuable works of Mr. Bracey Clark make a conspicuous figure, but appear to be brought forward merely as a subject for criticism. "Mr. Clark," says the author, "takes great pains to prove that he has discovered that the hoof is elastic, a circumstance that has been known for more than two hundred years; and that shoeing is productive of injury to the feet, which was known even before it was generally practised. Wild horses, as well as the greater part of those employed in agriculture and commerce, in Persia, Ethiopia, Tartary, Japan, &c. are never shoed: how is it, then, that shoeing is so generally practised in Europe? The answer is, that shoes are absolutely necessary, in consequence of the heavy

burdens they have to carry, the hard stony roads they are obliged to travel on, and the necessity they are under of exerting, with so little cessation, the whole of their power, &c." "These considerations are sufficient to prove that shoeing is both injurious and necessary; and should arrest the pens of those modern writers who are daily claiming, as discoveries, what have been known for four hundred years." Mr. Clark has certainly taken pains to prove that shoes, of whatever form they may be, are always injurious, and that however carefully the hoofs are pared and otherwise treated, as long as inflexible iron shoes are nailed to them, the feet are constantly in a progressive state towards disease. If this be really the case, if shoeing is invariably so injurious, Mr. Clark has an indisputable claim to the discovery.

I cannot find any passage in Mr. Clark's work to justify our author's assertion, that he has taken great pains (*fait tous ses efforts*) to prove that he is the discoverer of the elasticity of the hoof. He says, "I have detected some undiscovered parts in the hoof, and some circumstances in the plan of its structure, before unknown, and especially pointed out for observation its elastic properties." This surely cannot be considered as laying claim to such a discovery. One of the circumstances or parts of the hoof which Mr. Clark claims as a discovery, is that which he calls the *coronary frog band*. "This," says M. Jauze, "has been described by Bourgelat, under the name of *Bourrelet graisseux*." Bourgelat, in his "Essay on Shoeing," says, "When the foot is taken out of its horny box (the hoof), the first thing that strikes us is *un bourrelet*, which forms the superior part of it." This name is evidently applied by Bourgelat to that part which Mr. Coleman has named *coronary*

ligament, or *ring*. In speaking of the *hoof*, Bourgelat says, "the thickness of this horny box is not the same through its whole extent: it is most considerable in front, and diminishes gradually towards the heels: it is much thinner at the upper part or coronet than below, and the inside quarter is weaker than the outside: the thickness of these, as well as the fore part, increasing towards the bottom. On examining the inner surface of the *hoof*, we find it extremely thin in its upper part, and presenting a sort of circular groove (un sort de biseau)." This blunder has been noticed by the translator of Mr. Clark's work, and M. Jauze attempts to pass it off as an error of the press: for in the third part of this work, which was published some time after the first, there is a list of errors, in which the word *corné* is substituted for *graisseux*. There is also a reply to some observations on M. Jauze's book, by M. Huzard; but it is evident, from the above quotation from Bourgelat, that the coronary frog band of Mr. Clark was not noticed by that eminent veterinarian: nor is there any description of it in his other works, or in the *Traité du Pied* of Professor Girard. "Mr. Clark," he says, "has erred in many other passages (dans une *infinité*)." Page 28, line 1, he says, "in the foot of the ox there is neither pad nor cushion to diminish the reaction of the ground. (*Il n'y a ni matelas ni coussin pour pallier les reactions du sol*)." He is in error, also, when he states that "the camel and the elephant have a cartilaginous pad on the under part of their feet." Now in Mr. Clark's work, p. 119, the reader will find the matter thus stated:—"Indeed we discover most clearly, on investigation, that to every animal is given a share of elastic yielding to the foot, in order to destroy all jar and resistance, reciprocally

to the parts of the foot as to the body; and a change of form takes place in the foot according to the weight or exertion brought upon it. *In the elephant, cartilaginous cushions, for this purpose, are seen disposed under the foot, and in the camel oblong pads; in the ox, this non-resistance to the load is effected by a deep division of the foot to the fetlock joint, thus making of it two members, thereby giving a flexibility that answers the same end.* In the horse, a single pad is seen, for of such nature is the frog; and this yielding property in the foot of him and his tribe, or family, is less, perhaps, than any other family of quadrupeds, on account, it would appear, of the difficult combination of properties found with him, viz. an extraordinary degree of speed with a large or heavy body which, to be impelled with effect, required parts that should not be too yielding, by which the impulse had been diminished; and hence it is, that this property has been nearly overlooked, and the foot treated by the smiths as though this necessary provision and property had in him no existence more than in a mass of wood of the same figure." It appeared necessary to transcribe the whole of the passage from Mr. Clark's work, that the reader may form a just estimate of M. Jauze's criticism.

Mr. Clark is accused of another error, in saying that "the thickness of the wall of the hoof diminishes from the front to the back part." There may be some few exceptions to this rule, but the truth of the statement with respect to the fore feet is well known to those who are acquainted with the structure of the foot, and the hoof is so described by Bourgelat in the above quotation. The first part of M. Jauze's work contains a minute description of the forge or smith's shop, with the various utensils and tools that are employed in

shoeing; this is followed by a description of the origin, properties, &c. of the coal and wood that are made use of; and here the reader is favoured with the important information that coals are found in the interior parts of the earth, under stones more or less hard; that the hard and compact substance of trees is named wood, and that the different kinds are distinguished by the generic name of the vegetable which produces it; that it is employed in the construction of the forge and utensils, and in forming handles for the various tools. The next article treats of the use of water in the smith's shop, which he describes as "a cold, liquid, and transparent body which has the property of moistening every thing that it touches;" he refrains, however, from entering into the various distinctions that are commonly made between fountain-water, rain-water, sea-water, &c. his *only aim* being to make known, in *few words*, the uses to which a fluid so universally spread over the surface of the earth, is applied in the smith's forge. Having enumerated its various uses, not in very few words, he proceeds to article 20, which treats of iron. This elaborate article will not perhaps prove very instructive or entertaining to the veterinary student, though the learning and deep research displayed in it may excite his astonishment; for he wishes to make it appear that he is familiar with the works of the ancients, both Greek and Latin, by citing Pliny, Strabo, Diodorus Siculus, Hesiod, and others, to show that iron was discovered 3200 years ago. After a long dissertation on the different kinds of iron and steel, the construction of furnaces, and the means employed for separating the metal from the ore, he describes the uses of iron in veterinary medicine. Here the reader is informed that "when diluted *vitriolic*

(sulphuric) acid is poured on iron filings, it dissolves it with heat and effervescence, and disengages from it a great quantity of its *inflammable principle*, the vapours which arise being charged with phlogiston." "Steel differs from iron," he says, "by containing a larger proportion of the inflammable principle." The second part begins with the anatomy of the foot, which is the same as Bourgelat's and Girard's, except in substituting the word *bourrelet corné* for *couronne*: this change is probably intended to cover the mistake before noticed. There are no plates to illustrate the description, except a side-view of a shoed hoof, and a view of the bottom of the hoof of the natural size, and, as M. Jauze says, of the natural form, or *bien proportionné;* but it is what an English veterinarian would consider as a good representation of a contracted hoof, the frog of which had been trimmed by an ignorant smith. A scale of proportion also is given with it, as a basis for the proportion of all the shoes which he describes. This is followed by a description of the various shoes that are to be employed for ill-formed legs and feet, and diseased feet, for horses that cut, forge, &c. &c. The anatomy of the foot of the ass and the ox is next described, with the method of shoeing them; then comes a description of foreign shoes, beginning with the English, of which there is a tolerable representation. "Horses that are thus shoed," M. Jauze says, "are not fit to be ridden upon roads that are paved; as the animal must be in constant pain, owing to the sole being so imperfectly defended, and to the shoe being so made as to bear flat on the ground, by which the play of the lower joints is impeded. Many persons in France have, *without reflection, and merely from caprice*, adopted this method, which is only calcu-

lated for ruining horses very quickly. This is what Mr. Clark has endeavoured to show in his work of 1810."

The reader should be informed, that the French shoe is made somewhat in this form:

so that when the horse stands on a plain surface, neither the toe nor the heel have any bearing on the ground. The double curved line is intended to represent a side view of the outer branch of the shoe as it rests on the ground, the latter is shown by the thick horizontal line. This is not given as a correct representation of the degree of curvature which the French give the shoe; but it shows sufficiently that it is the middle of the shoe only that bears on the ground. This form, with the concavity of the surface next the foot, is termed the *ajusture* of the shoe, and is designed to effect a balancing, from the fore to the hind part, which he conceives is necessary to the free and easy motion of the lower articulations or joints (*il opere un balancement de devant en arrière, si necessaire pour entretenir le jeu des articulations inférieures des membres*).

The third part of the work begins with a minute description of a farrier's apron, with pockets or pouches, in which he keeps his instruments and nails (*le tablier à ferrer*). This *highly interesting* detail occupies nearly eight pages, and is moreover illustrated by a plate. Having dismissed the smith's apron, M. Jauze proceeds to a description of the instruments and nails, which are represented by plates, and very minutely described. Then comes the method of pointing the nails, which is followed by considerations necessary for the farrier to keep in mind before and after, as well as during, the time he is shoeing. This article contains some useful advice and observations. The next article, 122,

is on *Shoeing*; 123 treats *de l'aplomb*, a term of which the English veterinarian may wish for an explanation. "By the term *aplomb*, in veterinary language, is meant an equal distribution of the whole weight of the horse upon the four extremities; if one of them sustains more than another, the animal is said to be *hors d'aplomb* of that extremity. An inequality in this respect may arise from deformity of the body or limbs, or of the feet, in consequence of bad shoeing: there is also a particular or individual *aplomb*, that is, that which relates to the foot considered individually, supposing the horse to be without shoes; if, on planting the foot on the ground, the toe, quarters, and heel, touch it at the same time, which cannot be done unless the foot, as well as the parts adjoining it, are free from disease, and the motion of the joints free and easy, he is said to be *aplomb* of that foot; but, if one quarter or heel be higher than the other, that foot is not *aplomb*."

In article 124, on the shoeing of colts, M. Jauze says, "the heels should be kept open (*bien ouverts*), but not by cutting away the bars or any other part." This direction is surely superfluous, if not mischievous, as it seems to imply that there is some method of opening the heels, which, in shoeing, it is necessary to practise. "The shoes," he observes, "should be lighter than for horses, have less *ajusture*, and be fastened with six nails only." This article contains some other useful remarks. In speaking of the method of paring the well-formed foot, in article 125, he observes, that "the toe and heel should be so pared as to correspond with the *ajusture* of the shoe. He next describes the method of shoeing feet that are defective in form or proportion, but free from disease; each defect is considered in a separate article. The

method of shoeing diseased feet is then described (*des ferrures pathologiques*); each disease occupying a separate article, and referring to a description of a suitable shoe, before noticed. These, as well as those of the former class (defective proportion or form), are considered as *defaut d'aplomb particulier*; but the next class comprehends those failings which depend upon an inequality in the general *aplomb* (*defaut d'aplomb general*); among these are forging, cutting, body too long or too short, &c. &c.: these also are considered in separate articles. The work concludes with some short remarks on the shoeing of mules, asses, and oxen. There is an appendix to the book, containing some remarks on a pamphlet lately published by M. Sanfourche, on the means of preserving the *aplomb* of the horse by shoeing; and an answer to another, containing some observations on the introduction of M. Jauze's work, by M. Huzard.

Having given a short description of this elaborate work, the reader will not, it is hoped, think it wholly uninteresting, if a brief account be added of the present state of the veterinary schools in France and Germany; drawn from a report made by M. Sewel, assistant professor of the Veterinary College, London, to the governors of that establishment. Mr. Sewel first visited the Veterinary School at Lyons, which was established January 1st, 1762. "The museum," he says, "contains many preparations of great utility and novelty; particularly muscular and blood-vessel subjects, of the full size, and the whole of the nervous system, with the brain, entirely separate from the other parts, and well preserved: shoes of every description, and from various countries, are also shown. The infirmary stables are not extensive; paved and drained in the ordinary way, and ventilated

by the windows only: there are appropriate places for the other domestic animals. The forge is commodious, and well adapted for shoeing horses, and instructing the pupils in the art of making and putting on shoes; all which is superintended by a director of that particular branch of the art. A botanical garden is attached to the school, and lectures are given on botany and chemistry in rooms adjoining a laboratory. The theatre of anatomy is capable of containing about one hundred pupils; where lectures are delivered on veterinary anatomy, surgery, and diseases. A convenient dissecting room is adjoined to the theatre. Behind the building are a yard and paddock, into which sick or lame horses are occasionally turned."* The present director is M. Bredin, who furnished Mr. Sewel with letters of introduction to M. Huzard, inspector of the French veterinary schools, with which he proceeded to Paris. He was accompanied by M. Huzard's son to the Veterinary School at Alfort, about four miles from Paris, which was opened in 1766, and is now the principal school in France. This is much more complete than the school at Lyons: three large rooms are occupied by the museum and an extensive collection of veterinary works. There is a powerful

* According to a report, made to the National Convention by Messrs. Gilbert and Huzard, in 1795, the Veterinary School at Lyons was in a very bad state, and so situated (in the *faubourg de la Guillotiere*), as to be sometimes inundated by the Rhone. In consequence of their representation, it was removed to a spot opposite to the city near the road leading to Paris. During the siege and bombardment of Lyons, the students were dispersed by the bombs or shells that were thrown into the house and stables; but M. Bredin, the director, contrived to secure the preparations, &c. that were in the museum, and sent them off to a house he possessed at some distance from Lyons, where he collected the students and continued his instructions.

electrical apparatus for medical purposes. Lectures on agriculture, rural economy, and medical jurisprudence are delivered at this school, in addition to those given at Lyons. Stallions are kept at the expence of government, and sent annually into the provinces to improve the breed of horses; asses are also sent for the purpose of producing mules, which are much used in some of the provinces. The infirmaries for horses and the other domestic animals are more extensive, and better arranged than those at Lyons; and the forge affords more convenience for giving instructions in shoeing: there is also a portable forge, which may be removed to any part of the stables, where its use is required. A field of about six acres is set apart for agricultural experiments. The royal stables at Paris are well constructed buildings—well paved, drained, and ventilated: the horses do not stand on litter during the day. They appear capable of containing about two hundred horses. An infirmary and forge are attached to the stables. All the royal stud, as well as the cavalry horses, are shoed upon the plan established by the veterinary schools, under the superintendance of a resident veterinary surgeon.

The following year Mr. Sewel visited the veterinary schools in Germany; and, on his return, made a report of his observations to the governors of the London Veterinary College, of which the following is an extract. The Veterinary School at Vienna is inferior to that at Alfort; but it affords a greater scope for practice, the stables and other accommodations being calculated for receiving a considerable number of patients: all of them were then occupied, which afforded Mr. Sewel an opportunity of seeing some diseases peculiar to the season, which was very hot and dry; the principal of these were lameness, called fever in the feet and

lethargic attacks. The lameness was treated as it is in this country, with the addition of turning the patient into a paddock, where the grass was high, kept watered, and well shaded with trees. The horses with lethargy were also kept in the paddock, under the trees, and their heads were often placed under a shower bath. From the number of those that were in a convalescent state, Mr. Sewel concludes that the treatment was successful; though he says, it does not accord with the theory or treatment of the disease taught in this country. They consider the lethargic symptoms as dependant on some disorder of the digestive organs and liver, and treat it accordingly. The pupils are taught shoeing practically at the forge. The shoes are different from our own and those of France.* The stables are not of the first order, but roomy and floored with wood, a common practice in Germany. The other accommodations are very good; such as box stalls, and places for other domestic animals. The stables have no other means of ventilation than by the windows, some of which open above the horses: the plan of draining is very good, and the litter is removed during the day unless required for particular cases. The *pharmacy* (place where medicines are prepared and dispensed), and other offices, are well arranged. The buildings are constructed of wood, and are considerably dilapidated; but it is expected that the whole will be soon rebuilt. An old hermaphrodite horse is shown here, in which the male form seems to predominate; of which, Mr. Sewel considers it a malformation. The imperial stable

* According to M. Jauze, "the German shoes are, of all others, the most injurious for horses that have sound feet. There are three large crampons (caulking); one at the toe and at each heel, which make the shoe very heavy, and takes off the *aplomb* of the foot."

is a fine spacious building, floored with wood, well drained, and ventilated, and capable of accommodating several hundred horses; an infirmary is attached to it; also a forge, and a good contrivance for suspending and securing restive horses, for shoeing, or other operations. The horses, as well as those of cavalry, are shoed upon the school plan. Prince Charles's stables are exceedingly good as a model on a small scale; the floor is peculiar, being made of wooden piles or pieces, cut out of a rounded figure like large paving stones: they are well drained and ventilated.

At Prague and Dresden, Mr. Sewel found nothing very interesting except the royal stables at the latter place: in the coach-horse stable, a covered stream of water passes down the centre, which keeps it always clean and sweet. They are well ventilated, lofty, light, and spacious, and floored with wood. The saddle-horses work unshoed from spring until autumn, when the wet season commences; their feet are in a fine state of preservation in consequence: the kennel of boarhounds is worth attention.

Late in August, Mr. Sewel visited the Veterinary School at Berlin; which was founded by the late king, Frederic the Second. The theatre of anatomy, museum, and dissecting rooms, form one detached building, probably the most handsome and commodious structure of the kind in Europe. The museum is less extensive than that at Paris, but larger than the museum at Vienna, and contains some novelties which the latter does not possess. It has a complete series of skeletons, from the horse and ox down to the smallest quadruped, and the skin of an African horse, which has not the slightest appearance of hair upon it: there is a good collection of shoes of different

countries. The forge is well conducted, and the pupils manually instructed by the professor. The method of securing horses for shoeing, or operations, is very ingenious, and worthy of imitation. The king's horses are shoed at the school forge, and the cavalry are shoed according to the plan of the school. The stables are well constructed, paved, and ventilated; the box stalls, and places for other domestic animals, are well arranged. Litter is not used during the day, but sand is strewed under the horses. The stables were full of patients of all descriptions: there were several cases of lameness and lethargy similar to those at Vienna, and their treatment was nearly the same. There was a case of locked jaw that had been cured by a method different from that employed in this country.* A riding house is attached to the school, for the instruction of pupils intended for the army; who receive pay from the time of entrance. There is a beautifully constructed warm water and vapour bath, with a room adjoining, to receive the patients after bathing, which is heated occasionally by a stove; the bath is supplied with hot or cold water by an ingenious hydraulic contrivance. The royal stables are handsome buildings, and kept in excellent order. Sand is used under the horses instead of litter in the day time. They adjoin the river Spree, into which there is a paved slope, which enables them to bathe or wash their horses. Mr. Sewel brought with him some useful instruments for relieving oxen or sheep that are *hoven* or *blown*; he has, since his return, sent

* Had the governors of the Veterinary College known that locked jaw is very rarely cured in this country, they would perhaps have desired Mr. Sewel to describe the successful mode of treating it to which he alludes. This communication, probably, with the other *useful* observations he may have made, will be published at a more convenient time.

them into the country for trial: they are said to be employed, with great success, in Germany.

On arriving at Hanover, Mr. Sewel was introduced to Professor Havemann by assistant Professor Housemann, whom he had seen in England. The infirmary stables had much dilapidated during the war, from being occupied by foreign cavalry. There were no patients in them. The royal stables, which will contain between two and three hundred horses, are near the school: they are handsome buildings, well constructed, light, airy, and spacious; the windows have canvass shades.

In Holland there are no veterinary schools. The royal stables at the Hague are well constructed, and in fine order. The heads of the stalls and bottoms of the mangers are lined with glazed Dutch tile, and are kept in the cleanest state, with very little trouble. Sand is used in the stalls in the day time. At Brussels, there was nothing worthy of attention, except an effectual method of draining a large barrack stable, which Mr. Sewel does not describe. He says, that by inquiries and observation, he obtained in Holland some *useful practical information*, which, with the new remedy for locked jaw, the German method of treating lethargic complaints, and the various improvements he may have observed in the practice of the veterinary art, he will no doubt communicate to the public.

It is difficult, perhaps impossible, to form a correct comparative estimate of the state of veterinary science in this country and France, merely by perusing the works of the French professors and veterinary practitioners; but, if one might presume to judge from such evidence, the author would feel no hesitation in saying, that he thinks the veteri-

nary art has made greater progress in England, than in France. In the latter country, it was cultivated by men of science, at an early period; but here, it can scarcely be said to have existed till the establishment of the Veterinary College. Some good practical works appeared before that time, particularly Gibson's and Clarke's; but the anatomy and physiology of the horse had not been attended to. Since that period, however, it has been assiduously studied; and to the acquisition of this essential branch of knowledge we may attribute the great improvement that has been made in the treatment of diseases. French practitioners appear to be still influenced by the humoral pathology, as it is termed, and consequently depend too much on decoctions of plants, and other vegetable preparations, in acute diseases, many of which are nearly, if not quite, inert with respect to the horse; while similar diseases in this country are often subdued by one copious bleeding. Much praise, however, is due to the veterinary practitioners of France for the great attention they appear to pay to morbid anatomy. The accuracy and minuteness with which morbid subjects are examined after death, and the scrupulous attention with which every symptom of a disease is observed and noted, is worthy the imitation of British practitioners.

The splendid work of Professor Coleman, on the *Horse's Foot* and *Shoeing*, and the more recent publications of Mr. Bracy Clarke on the same subject, are of superior merit, I believe, to any thing that has appeared either in this country or on the Continent; and Mr. Sewel's *Nerve Operation*, for the relief of foundered horses, is likely to prove a valuable discovery.

Wells, Somerset, October, 1819.

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DESCRIPTION OF THE PLATES.

PLATE I.—Contains two beautiful representations of the horse's eye.

Fig. 1. Shows the pupil in a moderate light, such as that of the stable.

Fig. 2. Shows the pupil in a stronger light, or sunshine—See anatomical description of the horse's eye, page 202, where this is illustrated by a diagram.

PLATE II.—Contains two views of the eye in a diseased state.

Fig. 1. Represents the partial cataract, in which there are five specks, or opaque parts, in the pupil.

Fig. 2. Represents a complete cataract, in which the pupil, or rather the crystalline lens, has become wholly opaque and roundish, but rather irregular in its form.

PLATE III.—Represents a horse's leg with the hobbles placed on them, with the rope passed through the rings of the hobbles in order to draw the legs together, and throw the horse down, for the purpose of securing him for firing and other operations. The hobble is represented also in Plate XXI. Fig. 2, on a larger scale.

Fig. 1. Represents a curb, and the mode of firing for that disorder.

Fig. 2. Shows the bone spavin, and the mode of firing for it.

Fig. 3. Shows the mode of firing most commonly practised.

Fig. 4. Another manner.

Fig. 5. The mode of firing practised at the Veterinary College.

Fig. 6. The seat of mallenders.

Fig. 7. The seat of the speedy cut.

Fig. 8. The seat of thorough-pin.

Fig. 9. The seat of sallenders.

Fig. 10. The seat of bog spavin.

Fig. 11. The rope hobble, or that hobble to which the rope is permanently attached.

Plate IV.—Represents the sensible foot, as it appears when recently separated from the hoof; the blood-vessels having been previously injected with coloured size: *a, a, a,* represents the elastic membranes, named by Mr. Coleman the laminated substance; and by Mr. Bracey Clarke the elastic processes of the foot. This is the part which is affected in founder, and in most cases of chronic and incurable lameness: *b, b, b,* represents the coronary ligament, so named by Mr. Coleman, and by Mr. Bourgelat named *bourrelet graisseux.*

Plate V.—Represents the hoof, recently separated from the sensible foot; but on a larger scale than Plate IV. *a, a,* the horny laminæ, or processes which are interwoven with the sensible laminæ, or elastic membranes shown in Plate IV. *b,* the laminæ, or internal surface of the bars of the hoof.

Plate VI.—Fig. 1. Represents the bottom of a good hoof. *a, a,* the frog; *b, b,* the bars; *c, c, c,* the sole; *d, d,* that part of the sole which is affected with corns.

Fig. 2. Represents a contracted foot, or foot with contracted heels.

PLATE VII.—Two views of the crust or wall of the hoof separated from the other parts.

Fig. 2. Represents the crust when recently stripped off: Fig. 1. Represents the same subject after it has shrunk, or contracted by being kept a few days: *a, a,* the horny laminæ which were interwoven with the sensible laminæ, or elastic membranes of the sensible foot; *b, b, b, b,* the extremities of the heel, the bars having been cut off; *c, c,* the groove in which the coronary ligament is lodged. This part is named by the French *le biseau.*

PLATE VIII.—Fig. 1. Represents the ground bottom, or surface of the French shoe.

Fig. 2. A side view of the side of the shoe, showing its curvature, or what the French term its *ajusture.* This is better shown in Fig. 3. The line *a, a,* Fig. 2, represents the ground, or even surface on which the shoe rests; *b, b,* the toe and heel of the shoe.

Fig. 3. Represents a foot shoed in the French manner: *a,* the front of the hoof; *b,* the quarter; *c, c,* the toe and heel of the shoe; *e, e,* a level surface on which the shoe rests.

Fig. 4. Another French shoe.

Fig. 5. The *ajusture,* or curve of the shoe: *b, b,* the toe and heel of the shoe; *a, a,* a level surface on which it rests.

PLATE IX.—Fig. 1. The common English shoe, usually employed for hunters.

Fig. 2. The hinged shoe: *a,* a steel rivet, by which the two branches of the shoe are held together; *b,* the rivet detached from the shoe.

Plate X.—Represents the back part of the foot, pastern, and fetlock joint, dissected, in order to show the ligaments and cartilages: *a*, the smooth surface over which the back sinew passes; *b*, the ligament which encloses the back sinew, forming a sheath for it, and keeping it in its situation. In this preparation some part of the ligament was removed, in order to show the smooth surface *a*; *d*, *d*, *d*, a ligament, going from the sesamoid bones to the small pastern: its use seems to be that of giving strength to the pastern joint, which, from the oblique position of the pastern bones, would otherwise have been very insecure; *e*, the insertion of the ligament; *f*, *f*, the lateral cartilages; *g*, the bottom of the coffin bone.

Plate XI.—A front view of the bones of the foot and pastern: *b*, the large pastern; *c*, the small pastern, or coronary bone; *d*, the coffin bone. These bones may be easily seen at a kennel, and will give the reader a better idea of the parts than any plate can give.

Plate XII.—A back view of the bones of the foot and pastern: *a*, *a*, the sesamoid bones; *b*, the large pastern; *c*, the small pastern; *e*, the navicula, or nut bone; *d*, the bottom of the coffin bone.

Plate XIII.—A back view of the foot and pastern, dissected, in order to show the flexor tendon *a*, *a*, passing through its sheath *b*; *c*, *c*, the lateral cartilages; *d*, the bottom of the coffin bone.

Plate XIV.—Three side views of the hoof, showing the different degrees of obliquity in its form.

Fig. 1. A side view of the sound hoof, with a scale, showing the proper degree of ob-

liquity to be 45 degrees of elevation; *a*, the quarter; *b*, the heel; *d*, the toe.

Fig. 2. Side view of the convex, or pumice foot, in which the hoof has lost its natural form, and approaches five degrees toward the horizontal line.

Fig. 3. A hoof approaching too nearly the perpendicular.

PLATE XV.—Represents a perpendicular section of the foot and pastern: *a*, the coffin bone; *b*, the navicula, or nut bone; *c*, the small pastern, or coronary bone; *d*, the large pastern; *e*, the flexor tendon, or back sinew; *f*, the part of the flexor tendon which moves upon the nut bone; *g*, the part of the coffin bone where the flexor tendon terminates, or is inserted; *h*, *h*, the elastic matter or cushion of the frog; *i*, *i*, the horny frog; K, the horny sole; L, the crust, or wall; *m*, the sensible laminæ, or elastic membranes.

PLATE XVI.—A transverse section of the foot, divided a little below the coronet: *a*, the coffin bone; *b*, the navicula, or nut bone.

PLATE XVII.—Represents the bottom of the sensible foot, from which the horny sole and frog have been recently stripped off; *a*, *a*, the sensible or fleshy sole; *b*, *b*, the sensible bars; *c*, *c*, the sensible frog.

PLATE XVIII.—Represents a frost shoe. This shoe is designed for slippery roads, and on such occasions renders a horse perfectly secure; the sharp wedge-like substance at the heel being merely screwed into the shoe may be removed and applied again at pleasure: *a*, the shoe complete; *b*, the female screw in the heel; *c*, the wedge that screws into

it; *d*, its screw; *e*, the key for fixing and removing the wedge.

Plate XIX.—Represents the teeth of the under jaw and the tushes, with the marks by which the horse's age is ascertained.

Plate XX.—Represents part of a stable, with a stall for two horses, and the new rack and manger: A, the rack; B, B, the mangers; C, C, the sides, or partition of the stall; D, D, halters, with plugs of wood at the ends.

Plate XXI.—Fig. 1. The firing iron.

Fig. 2. The hobble; *a*, the buckle; *b*, the ring through which the rope passes.

Fig. 3. An iron for cauterizing the spermatic cord. This, however, is unnecessary, if the testicle is separated or cut off with the hot firing iron.

Plate XXII.—Fig. 1. The clams for castration.

Fig. 2. The docking instrument.

Plate XXIII.—Fig. 1. Mr. Coleman's patent clip shoe: *a*, the clip.

PLATE II.

Fig. 1.

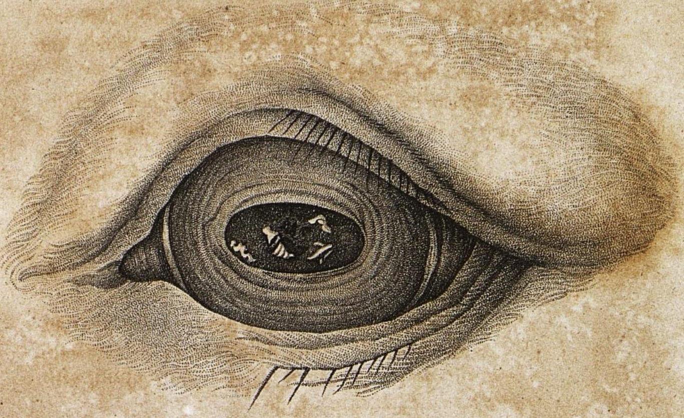
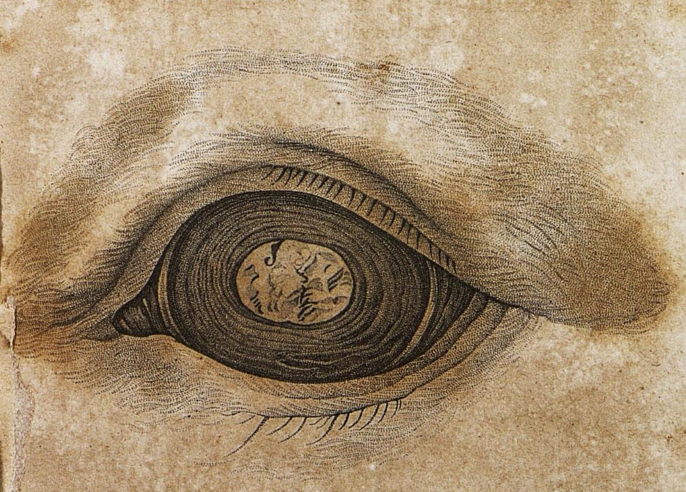


Fig. 2.



J. Shury sculp.

PLATE 3.

Wm. Traies Del.

Plate 4

THE INTERNAL OR SENSIBLE FOOT.

Plate 5.

THE HOOF SEPARATED FROM THE SENSIBLE PART.

Plate 6.

Fig. 1.

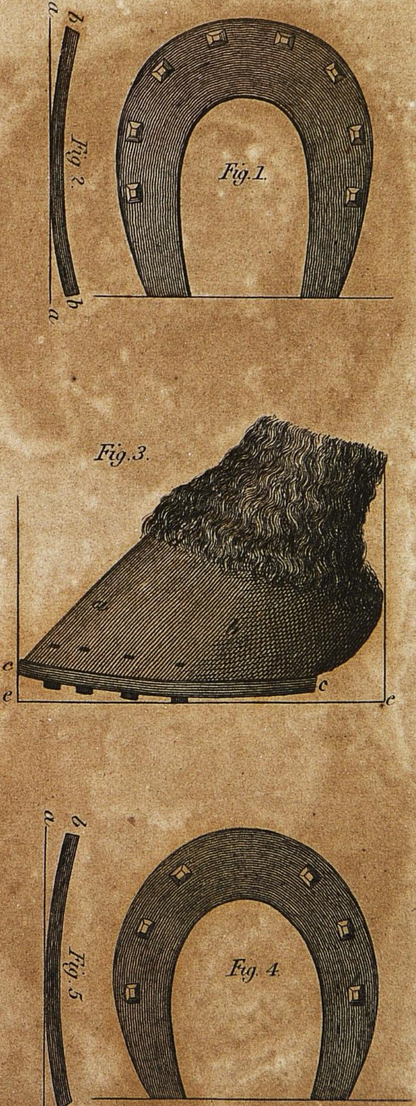
Fig. 2.

J. Shury Sculp.

Plat. 7.

J. Shury Sculp.

Plate 8.



J. Spencer del.

Plate 9.

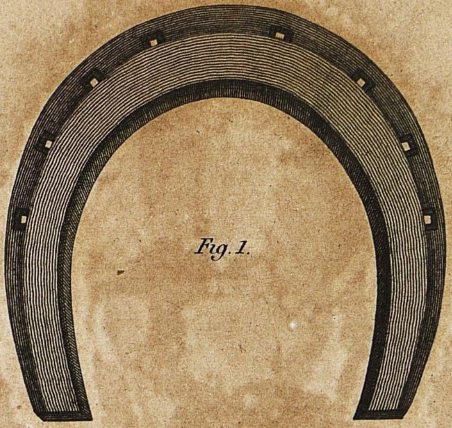


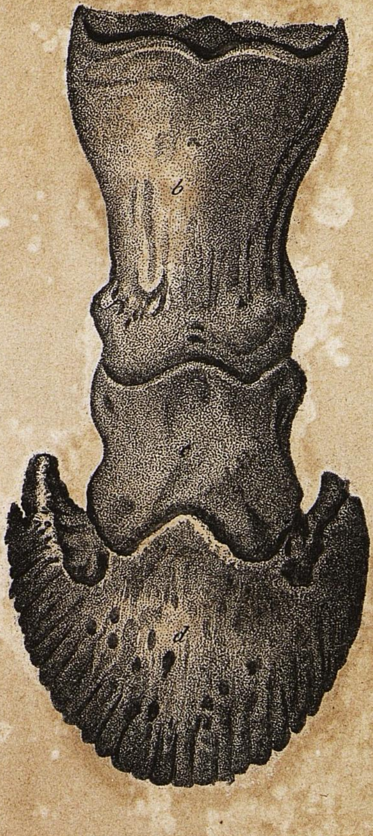
Fig. 1.

Fig. 2.

J. Spencer del.

J. Shury Sculp.

Plate II.



J. [illegible] Sculp.

J. Slatry Sculp.

Plate 13.

J. Stury Sculp.

Plate 14.

Fig. 3.

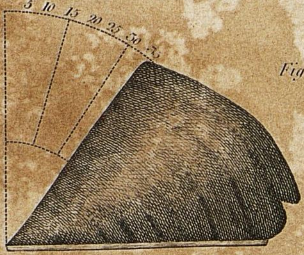


Fig. 1.

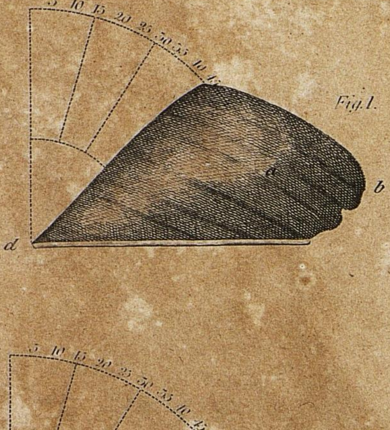
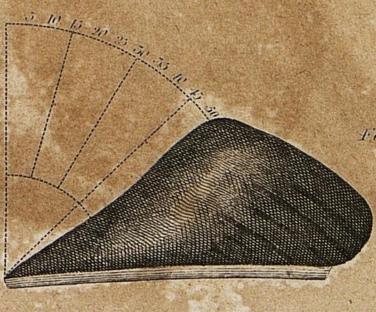


Fig. 2.



d
e
c
b
f
a
g
h
h
i
k

Plate 17.

THE BOTTOM OF THE SENSIBLE FOOT.

a
d
e
b
e

Teeth at various Ages.

Plate 20.

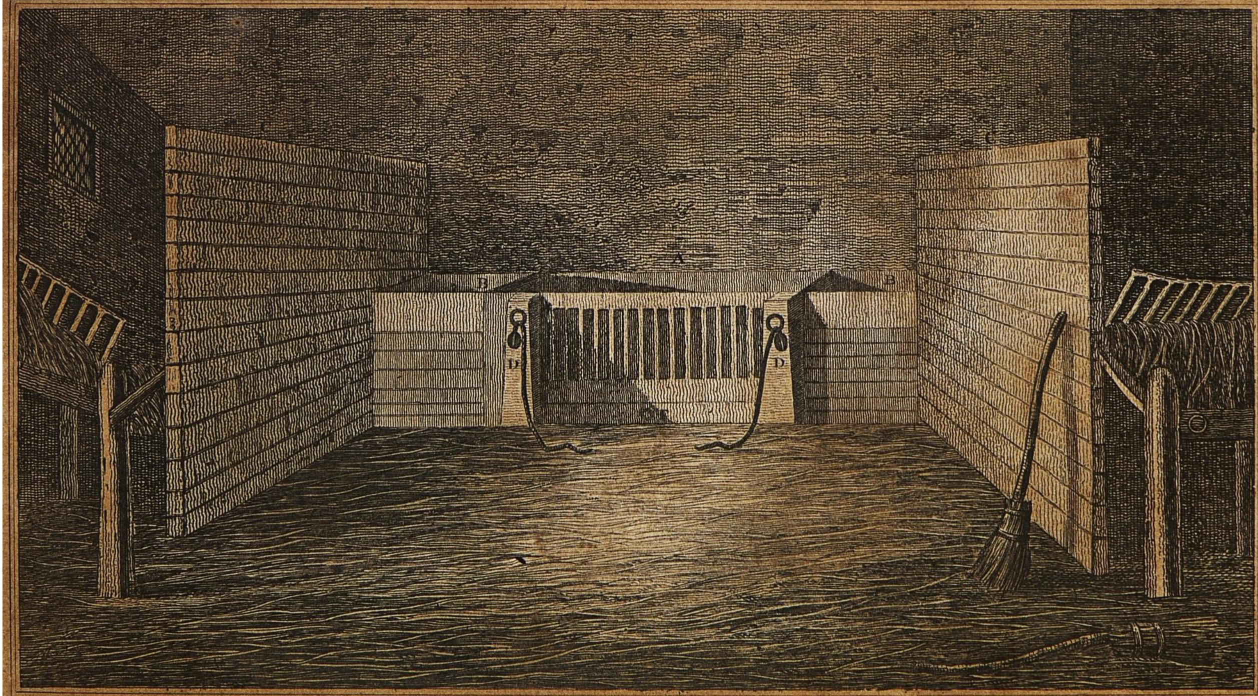
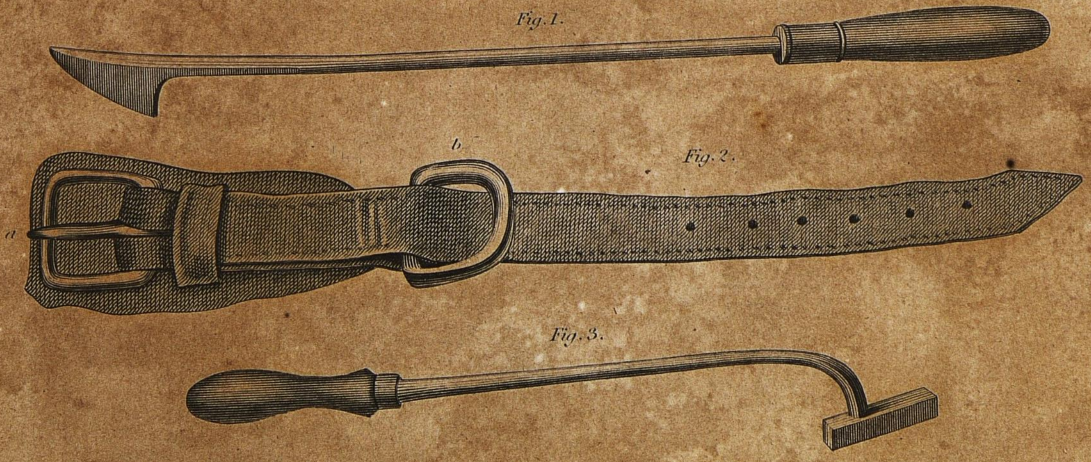


Plate 21.



Wm. Traies Delt.

Fig. 1.

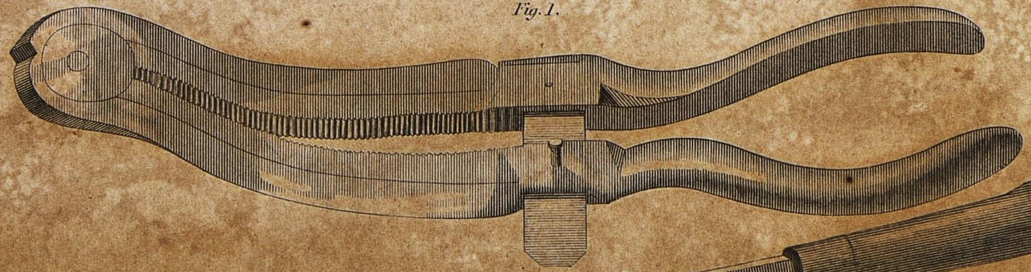


Fig. 2.

W^m. Traies Del^t.

Mr. Colemans Patent Shoe.

A

TREATISE

ON

VETERINARY MEDICINE.

INTRODUCTION.

As the preservation of the horse's health is an object of the highest importance, I shall begin my treatise with some observations on that subject. The most effectual method of accomplishing this is to keep him in a wholesome stable, work him fairly, feed him properly, and to observe all those attentions which, taken together, and considered generally, are named grooming. According to this view of the subject, the first object of consideration is the construction and arrangement of the stable.

CHAPTER I.

ON THE STABLE.

Loftiness is very desirable in a stable. It should never be less than twelve feet high, and the best method of ventilation is by means of a chimney or square opening in the ceiling, communicating with the open air, or it may be made in the form of a dome or cupola, which would be more orna-

mental. The chimney need not be open at the top so as to admit the rain, but should be roofed, and have lateral openings by means of weather-boards, as they are termed. As to the admission of air into the stable, the usual means provided for that purpose are quite sufficient; that is, by windows. The method adopted in barrack stables, of making an opening in the wall, near the ground at the end of the stable, is useless, to say the best of it. A stable when properly paved, and kept moderately clean, requires only a shallow, wide gutter, twelve inches wide, and one inch deep. The best floor for a stable, by far, is hard brick; and, next to that, lime-stone, not less than one foot square. I have seen a stable belonging to Mr. Lovell, of Wells, that is thus paved, but with wider stones, and so chipped as to have numerous small furrows, all of them tending towards the centre and back part, and I never before saw so clean or so nice a stable, except one belonging to Mr. Atkinson, at Cheddington, and that, I think was superior to any I ever met with, especially in its interior arrangement. The floor of the stall should never incline more than one inch in a yard, and the inclination should be continued back to the gutter only. Some litter should always be allowed for a horse to stale upon, which should be swept away as often as is necessary. This, with a pail or two of water thrown upon the floor, and swept off while the horse is at exercise, will keep the stable perfectly clean and free from offensive smells. The

depth of a stable should not be less than eighteen feet, nor the height, as I observed before, less than twelve. The width of a stall should not be less than six feet clear. But, when there is sufficient room, it is a much better plan to allow each horse a space of ten or twelve feet, where he may be loose and exercise himself a little. This will be an effectual means of avoiding swollen heels, and a great relief to horses that are worked hard. With respect to the rack and manger, I have given a plate of one which I have seen employed in a waggon-stable with the best effect. It is intended for two horses; for horses when a little accustomed to each other, and working together, will always agree well when kept in the same stall, especially when they have, as is the case here, separate mangers, and are prevented by their halters from interfering with each other's corn. The space for two horses is twelve feet. The mangers and rack are all on a level, and about three feet from the ground. The manger should never be less than eighteen inches deep, eighteen inches from the front to the back part, and two feet in length. The rack should be four feet for one horse; for though the plate represents a stall for two horses, the same kind of contrivance is equally or better adapted for one, and that is what I am now describing. The rack is represented with staves in the front, like a common rack, but this is not necessary; indeed, it is better to have it closed in front. The back part of the rack should

be an inclined plane made of wood; should be gradually sloped towards the front; and should terminate about two feet down. Such a rack will hold more hay than ever ought to be put before one horse. The advantages of this rack are numerous. In the first place the hay is easily put into it, and renders a hay-loft over the stable unnecessary; and this may be an inducement to the builder to make the stable as lofty as it ought to be, and render other ventilation unnecessary. All the hay that is put into this manger will be eaten; but in the common rack it is well known that a large portion of the hay is often pulled down upon the litter and trodden upon, whereby a considerable quantity is often wasted. It prevents the hay-seeds or dust from falling upon the horse, or into his eyes; and what is of considerable importance, though seldom attended to, there will be an inducement to the groom to give the horse hay in small quantities at a time, and frequently, from the little trouble which attends putting it into the rack. The saving in hay that may be effected by the use of this rack is so apparent that it need not be dwelt upon. Some mischievous horses will throw out the hay with their noses: but this may be effectually prevented by one or two cross bars —that is, crossing the upper part of the crib from the back to the front. A great saving also may be made in oats by so fastening the horse's head during the time of feeding that he cannot throw any of them out of the manger. If a horse

is allowed a peck of oats a day, and has, as he may have, one-eighth part thus saved, it will amount to nearly a peck in a week. There must not, however, be a diminution in the horse's allowance on this account, if my advice with respect to feeding be followed. He must have one peck of oats in twenty-four hours; but then he must not have more than from eight to twelve pounds of the best hay in that time, given at four, or three times at least. In the rack I have now been describing, every ounce of that hay will be consumed by the horse, will be perfectly digested, and keep the stomach in health.* This kind of rack and manger, from being boarded up in front, will effectually prevent the litter from being kept constantly under the horse's head and eyes, by which he is compelled to breathe the vapours which arise from

* In one of the best hunting stables I have seen, Colonel Berkeley's, at Berkeley Castle, the allowance of hay for twenty-four hours did not exceed eight pounds at any time of the year. In some stables the allowance, or rather the consumption of hay, will be three times that quantity. When a horse has for some time been accustomed to eat an immoderate quantity of hay, his stomach will have acquired an increased capacity or size, which probably cannot be suddenly reduced, without causing some inconvenience to the animal. I have lately heard of a horse that consumed three hundred of hay in a week: probably one half of this was either wasted or stolen; yet the proprietor had no suspicion of this being the case; but even supposing that one half only of the quantity was eaten by the horse, it would amount exactly to double the quantity I have set down as a full allowance; that is, twelve pounds in twenty-four hours. This is the barrack allowance to troop horses, and is always found sufficient.

it. The length of the halter should be only four feet from the headstall to the ring through which it passes: this will admit of his lying down with ease, and that is all which is required. The ring should be placed close to that side where the manger is, and not in the centre of the stall. The sides of the stall should be sufficiently high and deep, to prevent horses from biting and kicking each other. In post and waggon stables, where the stall is made for a pair of horses, the manger will be placed at each end, as described in the plate, and the hay-crib in the centre. The window of the stable should be at the south-east end, and the door at the opposite end. The window should be as high as the ceiling will admit of, and in size proportioned to that of the stable. In one of twelve feet high, it need not come down more than five feet, and will then be seven feet from the ground, and out of the way of being broken. The frame of the window should be moveable upon a pivot in the centre, and opened by means of a cord running over a pulley in the ceiling, and fastened by means of another cord. With a window of this kind, in a stable of three or four horses, no other ventilation will be required: a person never need be solicitous about finding openings for the air to enter when there is sufficient room above, and means for it to escape. It is a good plan to have two doors, or to have the common door divided transversely, about four or five feet from the ground; the upper part may

then be occasionally left open. Where much light is admitted, the walls of the stable should not be white, but of a stucco or lead colour, and better if painted; for then they may always be washed clean with soap and water, as well as the stalls, rack, and manger; and this should be done once in two or three weeks, or a month at furthest. If the walls are boarded up to the height of about five feet, and this, as well as the stalls, painted of a light wainscot colour, it will look extremely neat, and the under part of the wall will be kept drier, and look more comfortable. A stable should be lighted by means of an Argand lamp suspended from the ceiling, and moveable. This will give a far better light, is cheaper, and more secure than any other contrivance whatever, except gas-light, and, if properly trimmed, will burn without a particle of smoke. Instead of having a large corn chest in the stable, a handsome seat may be made at the back of the stable extending as far as may be necessary: in this there may be partitions to separate the beans, or the bran, and places may be made to rest the arms upon, so that a gentleman may sit down comfortably in his stable and see his horses taken care of. A stable thus constructed will be found conducive to the health and the comfort of horses, and will afford an inducement to the groom to attend to every little circumstance which may contribute to cleanliness. He will not allow the smallest bit of dung to remain swept up at one end of the stable,

as it commonly is. The pails should be kept outside, and not standing about the stable, as they commonly are. If it is necessary to take off the chill from water, it is much better, and more easily done, by the addition of a little hot water, than by suffering it to stand in the stable; and while the horses are at exercise, the litter should be all turned out to dry, and the floor well washed or swept out. A little fresh straw may then be placed for the horses to stale upon. Litter thus dried during the day will serve again as well as fresh straw for the bottom of the bed, and be perfectly free from smell. The litter necessary to be kept under a horse that he may stale with comfort, and without splashing himself, is not considerable, and may be changed once a day. A great saving may be made in litter by turning it out, and drying it as I have described; and if a shed were built adjoining a stable, it may be done at all times, and may serve also to exercise and clean a horse in wet weather

Neither dogs, fowls, nor goats, should ever be permitted to enter a stable; * and dung should be kept at a distance from it. In speaking of the arrangements of the stable, it may not be amiss to notice what I consider a good contrivance in

* When a horse that has been accustomed to company is taken to a situation where only one horse is kept, the society of a goat may contribute to his comfort, and make him more cheerful than he would otherwise be; and cheerfulness is certainly conducive to health.

cleaning horses, that is, to have two straps, one on each side the stall, about one yard from the head of it. By these the horse may be fastened during the time he is cleaned, by which means he will be effectually prevented from biting the manger or the groom; and being kept back in the stall, the groom will be better able to clean the front of his fore legs, chest, and neck, and be able to move round him: this is better than strapping him to the rack. When the common rack and manger are preferred, the rack staves should be straight, and brought nearly down to the manger, and this may easily be done without the necessity of a hay-loft, and the manger may be made deep and wide as I have described it.

CHAPTER II.

FEEDING.

The best food for horses is oats and hay; but it is of importance that such only should be given as are of the best quality. Oats that are musty, or that have any degree of bad smell, are not eaten with that relish that good sweet oats are; therefore they are not so perfectly digested, nor is the chyle that is formed from them so pure; hence arise indigestion, foulness of blood, looseness of the bowels, and general debility. This is more especially the consequence when the hay also is bad. I have known a serious loss sustained by a pro-

prietor of post and coach horses, from keeping a considerable stock of oats, and neglecting to turn them. Many horses became glandered and farcied, apparently in consequence of this circumstance. Beans, when broken or bruised, may be an useful article of diet, joined with oats, for horses whose work is constant and hard. I have been assured, however, by some experienced coach and post masters, that during the hot summer months it is better to discontinue the beans, and substitute for them some good bran and oats, an excellent diet for horses whose work is very moderate, or whose digestion is affected. Some horses, it is said, do not eat bruised oats with an appetite; in which case it is probable they do not digest them quite so readily as those which are not bruised. And when we consider that there is often a defect in the grinders, which causes a horse to masticate slowly and imperfectly; that horses have sometimes a voracious appetite, and swallow a considerable part of their corn without chewing it; and as corn that is swallowed unbroken is known to be indigestible; the bruising of oats must be considered as a matter of great importance, and may be the means of saving a considerable quantity of that article. Another circumstance to be considered is, that when oats are taken into the stomach unbroken, being indigestible, they cause a great deal of useless exertion of the stomach in endeavouring to digest them. This exertion is not only useless, but very injurious, gradually

weakening that important organ, and laying a foundation for many diseases, especially that named flatulent cholic, or gripes.

It is generally thought, and I have been of the same opinion, that chaff, especially of clover, is an useful addition to oats, in causing them to be perfectly masticated. It is also thought, that if the horse's hay were given principally, or even wholly in the form of chaff, it would be the means of a great saving of hay, as well as of insuring a perfect mastication of the oats. There are circumstances to be considered, however, which may make rather against this opinion. Horses certainly prefer eating hay from the rack: and when it is good, and given four times a day in small quantities, the horse will eat his allowance with avidity, or with that appetite which will insure a perfect digestion and assimilation of the food; and so will it be with oats when they are good, cleanly sifted, and given in small portions at a time; and if spread thinly on the bottom of a wide manger, there will be no danger of his eating them too greedily. If he has any sharp edges in his grinders which prevent him from masticating properly, they must be rasped or filed, as will be described hereafter. Oats thus given, and not in excess, but duly proportioned to the horse's work, will be perfectly masticated, digested, and assimilated: the chyle formed from such a diet, and so dispensed, will be pure, and consequently the blood will be so also. Now let us contrast with this simple,

wholesome, and economical mode of feeding, that which is commonly adopted. The hay, in the first place, is either of indifferent or bad quality, and given in unlimited quantity. The oats are generally, perhaps, tolerably good; but sometimes they are indifferent, or even musty and unwholesome; they are dispensed irregularly, and often in too large quantities at a time, and so thrown into the manger that a horse may easily fill his mouth, and in such a way, that he must of necessity swallow some of them unmasticated or unbroken. This is more especially the case when two or more horses are feeding together without a separation; each then is eager to finish his allowance as quickly as possible, in order to rob his neighbour; and in doing this, however perfect his teeth may be, he cannot avoid swallowing some of his corn without chewing it.

In the usual way of feeding and treating horses, no attention is paid to the state of the stomach when they are put to work, but frequently they are put into a chaise, or coach, or ridden off at a quick rate with their stomachs loaded with food; the consequence of this has often been gripes, inflammation of the bowels, and even sudden death. In the simple and economical mode of feeding I recommend, the horse is always ready for his work, digestion goes on rapidly, every particle of nutriment that is contained in the food is extracted by the stomach without any injurious exertion, and is converted into pure blood. But when the stomach

is loaded, as in the other case, even with good food, digestion is always imperfect, and performed with difficulty; and when the hay, as it often is, is bad, the consequence is still worse. The stomach, by such management, is sure to become in time more or less diseased; and when this happens, a foundation is laid for many diseases. (See *Broken Wind*, *Chronic Cough*, *Cholic*, *Worms*, &c.)

Thus, besides the additional expence of this imprudent method of feeding, many disorders are engendered by it; and, I may safely add, that a horse so fed will not do his work half so well as one that is fed properly. (See Vol. III.) A horse, whose work consists in travelling a stage of twenty miles three times a week, or twelve every day, should have one peck of good oats, and never more than from eight to twelve pounds of good hay in twenty-four hours.*

The hay, as well as the corn, should, if possible, be divided into four portions, and each portion, both of oats and hay, should be wetted with water: this will facilitate mastication and swallowing, and likewise digestion; a horse thus fed will so quickly digest that he will always be fit for his labour. The largest portion, both of oats and hay, should

* In stating eight pounds as the daily allowance of food for a saddle horse, his stomach is supposed to be in a healthy state, and not stretched by immoderate feeding. In this healthy state of the stomach the appetite is always moderate, both for hay and for water. When the stomach has been accustomed to a much larger allowance, the necessary reduction in the quantity of hay should be gradual.

be given at night; and the next in quantity to this, early in the morning; the other two portions in the forenoon and the afternoon, or about twelve and four. But this must, of course, depend upon the kind of work a horse is employed in, and must be regulated accordingly. Horses that have been accustomed to an unlimited allowance of hay will often eat their litter when put upon a proper diet, but this must be prevented by a muzzle. It may require a little time, when a stomach has been injured in this way, to restore it again; but, by persisting in the mode of feeding I have recommended, it may almost always be accomplished. The injury done to the stomach, by the common method of feeding, and consequently to the animal's health or constitution, arises from two circumstances:—first, the distension of the stomach with food; next, that of the large bowels with excrement, which impedes respiration, and debilitates the stomach, considered only as a muscular organ; for digestion, probably, is performed in the horse, not only by a juice secreted in the stomach, but also by muscular contractions. When the stomach is debilitated to a certain degree, the nutritious parts of the food are extracted with difficulty, the chyle is imperfect, and the blood, in consequence, is loaded with excrementitious matter, which is the cause of many diseases.*

* We have no precise knowledge of the manner in which the food, or certain parts of it, is converted into chyle; but it is upposed that the chyle, when formed, is absorbed by vessels

CHAPTER III.

ON THE TREATMENT OF HORSES IN SUMMER.

It is too much the practice in turning horses out in summer to choose the richest pastures, as if the intention of giving them this indulgence were to fatten them. Many inconveniences result from this practice, and not unfrequently much injury is done to the animal, and great difficulty found in getting him into working condition, when he is taken up. The best time for

named lacteals, which proceed from the internal surface of the bowels, and terminate in the thoracic duct. It has appeared to me that the stomach may be considered as an organ that is endued in a peculiar and especial manner with the vital principle, or nervous power, which gives it a perfect control over that tendency to chemical changes or fermentation which exists in all dead vegetable matter when moistened, and placed in a suitable temperature. The previous mastication of the food, the trituration it undergoes in that process with saliva, render it fit for that process which is named digestion, and which may be nothing more than a complete extraction of the mucilaginous, saccharine, and saline matter of the food, and a perfect commixion of them, by the muscular contractions and heat of the stomach. When this has been accomplished, the digestive mass passes off from the stomach through the small intestines; and in its passage, the nutritious parts, or chyle, are gradually absorbed. There is a further provision, however, for the perfect extraction of the nutritious matter in the *cæcum*, or the blind gut, which may be considered as a second stomach. Here the food remains for some time, and, when it gets into the colon, is completely fœculent or excrementitious.

turning out a horse is the latter end of May, or beginning of June. High land is better than meadows, especially such as adjoin rivers, or are otherwise wet. Short sweet pasture should be chosen; it is better indeed to have it rather bare than abundant, and if there should not be sufficient, some hay and oats should be given. If the nights are cold he should be taken up at night, and put into a cool airy box, where he should also be kept during the day, when the weather is very hot and dry. A small field or paddock is better than a large one; and if there is a stream of water or a pond in the field, and the horse has been accustomed to drink immoderately, it should be fenced off, and a moderate quantity given twice a day with a pail. A moderate quantity of vetches may be given with advantage in such a situation; taking care not to give them soon after they are cut, or with the dew upon them. By keeping a horse in this manner for a month or six weeks in the situation I have described, he will receive all the benefit to be expected from a run at grass, and avoid the inconvenience which so often results from the method commonly pursued. Another important advantage will be obtained by it; for when the horse is taken up there will be no difficulty in getting him into good working condition in a short time. If there is no convenience for managing the horse as I have described, it will be better to soil him with vetches or short sweet grass in a large airy box for about a month,

than to turn him out in the manner generally practised. In soiling, only a moderate quantity of green food should be given at a time, and a small quantity of hay and oats should also be allowed.

CHAPTER IV.

EXERCISE.—TRAINING.

Exercise must be considered under two heads: first, that which is necessary to preserve the horse in health, and make him capable of ordinary exertions, or moderate work; secondly, that which makes him capable of extraordinary exertions, such as hunting or racing. Exercise of the last kind is commonly named training, which term, however, includes also the mode of feeding necessary to raise the muscular power to the highest degree it is capable of attaining. The horse was evidently designed for exercise, and for the use of man. His vast muscular power, and the impenetrable defence attached to his feet, were certainly not given for his own use only. If kept in a stable without exercise, his muscular power declines, his digestive organs become diseased, and so do the organs of respiration. The hoofs grow, and there is no wear; for the little that may be worn off, merely by the pressure of his own weight when standing still, is prevented by the shoes. The toe being thus elongated, the back sinews are

often strained; the foot becomes hot and inflamed, its horny covering contracts; the frogs become rotten, and incapable of performing the office for which they were designed; in short, the whole body becomes diseased. Exercise then, it is evident, is essential to his health, and even existence; and every part of his structure and economy appear to demonstrate that he was intended for the service of man. His powers, however, are limited, and so should his exertions be: but it is a fact, which must be regretted by all considerate persons, that the immoderate work in which he is often employed, so far from being salutary, or proportionate to his strength, as undoubtedly it was designed by his Creator that it should be, is injurious, and even destructive in a very considerable degree. And what greatly aggravates the mischief is, the early and premature age at which he is commonly employed.

When a horse is brought in for training, after having been kept in the manner described in the preceding chapter, he should be fed with hay and oats, and if greedy of water or hay, or if he appears inclined to eat his litter, he should be limited in hay and water, and be muzzled the last thing at night. For the first week he should have walking and gentle trotting exercise for an hour or two every morning. The stable should be kept clean and cool. The second week his exercise may be increased a little, and so may his oats. Should he appear, however, rather dull,

the membrane of his eyes rather red or yellow on lifting the eye lid, and the dung hard, in small knobs and shining or slimy, it will be advisable to bleed moderately and give a mild dose of physic, for which he should be prepared by giving two or three bran mashes a day, for two days. The fourth week he may be worked moderately, and if wanted for hunting, he should be put into a canter or hand-gallop once a day; and after this it will be necessary to increase his pace twice or three times a week, so as to make him sweat freely; taking care that he is walked for sometime afterward, that he may become rather cool before he returns to the stable, when he must be well dressed, fed, and watered, have a good bed placed under him, and be left to his repose. When a horse has been brought up from rich pasture he is generally loaded with fat, and requires a great deal of walking exercise and careful feeding. He may be trotted gently, however, after the second week, but will not be for a quicker pace for a month at least. During this time he should have two or three doses of mild physic, and when first taken up such horses generally require to be bled. When a horse is not taken up till the latter end of July or beginning of August, he has often a troublesome cough, which sometimes proves incurable; and sometimes dropsical swellings of the hind legs, which are not easily removed. Such horses give a great deal of trouble, and it is a considerable time before they can be got into con-

dition. It must be obvious, that when a horse is taken in for training, the treatment to be adopted must depend upon the state of the horse's condition at the time, and the manner in which he has been previously kept; and, whether he is wanted for hunting or racing, the principle to be kept in view during the process, is to keep him in a state of health, and gradually raise his muscular power and wind to that degree which may be necessary for the work he is to be employed in. This can only be done by proper exercise and feeding, giving, however, a little mild physic when necessary.

CHAPTER V.

STRUCTURE, ECONOMY, AND DISEASES OF THE INTERNAL ORGANS.

The body is divided into four principle cavities, which are the skull, or cranium; the chest, or thorax; the belly, or abdomen; and the basin, or pelvis. The skull contains the brain, or cerebrum; and the little brain, or cerebellum; it contains also the origin of the spinal marrow, named medulla oblongata, and the origin or trunk of ten pair of nerves, the principal of which are those which constitute the different senses as they are named; that is, smelling, seeing, hearing, tasting, and feeling. The brain is invested with two membranes, one very thin and transparent, and

closely in contact with it; the other much stronger and thicker, and unattached. The former is named pia mater, the latter dura mater. These membranes are continued to the spinal marrow, which they invest in a similar manner through its whole length. The brain is divided into two parts, named hemispheres, by the dura mater; which, dipping down between the lobes, forms what is named the falciform process. Between these two portions of dura mater, which form the falciform process, the great vein, or longitudinal sinus, runs, which, dividing towards the back part, forms the lateral sinuses. There are several cavities in the brain which are named ventricles. On cutting away the upper part of the brain, the two lateral ventricles appear, which generally contain a little moisture, and in certain diseases several ounces of water are contained in them, forming the disease named hydrocephalus, or dropsy of the brain. In sheep, a transparent bladder, full of water, is often found in one of the ventricles; this bladder is named an hydatid, and the disease produced by it is named gid, or giddiness. (See Vol. IV.) The lateral ventricles are found to communicate anteriorly with the olfactory nerves, which in quadrupeds are very large and hollow: they contain also a little moisture, and may be named the olfactory ventricles. Posteriorly the lateral ventricles communicate with a cavity which, in the human body, is named the third ventricle, but in animals, the fifth; and this

cavity has a communication with the sheath of the spinal marrow. The two lateral ventricles are separated from each other by the septum lucidum. In the posterior part of the lateral ventricles a long plexus of blood-vessels is seen on each side, lying loose in the cavity; these are named plexus choroides. The cerebrum, or brain, is separated from the cerebellum, or little brain, by a continuation of the dura mater, which is named tentorium. The principal diseases of the brain are phrenitis, or mad staggers, and hydrocephalus: these, however, with other subordinate and sympathetic affections, will be treated of in their respective places.

CHAPTER VI.

THE CHEST.

The chest of the horse is unlike that of the human body, becoming narrow towards the lower part, and terminating like the keel of a ship, a form more favourable to the flexion and extension of the fore legs, as well as of the shoulder-blades; than any other. It is formed by the spine, the ribs, and the sternum. The chest is a distinct cavity, being separated from the abdomen, or belly, by a muscular partition, named diaphragm. The chest contains the lungs, the heart, and in the young colt, the thymus gland. The lungs are made up of the ramifications of the windpipe and

blood-vessels with the common connecting membrane, named cellular membrane. The branches of the windpipe are commonly supposed to terminate in cells. In the amphibia the bronchiæ are stronger and more distensible, so that the injection may be forced a little more freely, and the cells made to appear larger. This has been found also in the lungs of professed divers, who, by continual practice, render the bronchiæ stronger and more distensible. The windpipe or trunk of the lungs is composed of cartilages or cartilaginous rings, joined together by a strong and elastic membrane. The cartilaginous rings are strong and thick in the front part of the windpipe, but gradually become thinner, and terminate in thin slips, or mere membranes, which pass over each other, instead of meeting end to end. By this contrivance the windpipe will admit of being compressed considerably, by the ends passing over each other; but such is the elasticity of the cartilage, that the moment the pressure is removed, the windpipe returns to its original form. The use of the elastic membranes which unite the cartilaginous rings, is to admit of the various motions of the windpipe, especially that of its being elongated, and so great is their strength, that we never in any accident find it torn, or the cartilaginous rings separated from each other. At the upper extremity of the windpipe there is a strong cartilaginous structure, named larynx. It is composed

nominally of five cartilages, which are named as follows:—1. Epiglottis. 2. Cricoid. 3. Thyroid. 4 and 5 Two Arytænoid. The epiglottis is at the root of the tongue, standing up by its elasticity, so as to form a right angle with the tongue, by which contrivance it is forced down, so as to cover the windpipe by every morsel of food that is swallowed. The other cartilages, properly speaking, compose the larynx, and are much thicker and stronger than the epiglottis. The larynx is incapable of being compressed or closed, except at one part near the bottom of it, where they approach each other so as to form a chink, which is therefore named rima glottidis, or chink of the glottis. The internal surface of the larynx, including the epiglottis, is lined with a membrane of great sensibility, especially at the chink, where it is so exquisitely sensible, that the mucous fluid designed for its lubrication, often becomes through disease a dreadful cause of irritation.

Notwithstanding the great sensibility of the membrane of the larynx, the same membrane when continued into the windpipe, appears to be nearly if not quite insensible, as I have proved, after the operation of branchotomy, by scratching with the nail, or with a knife, which does not appear to give the animal any pain; but if a feather is passed up so as to touch the chink of the glottis, a most violent cough is immediately produced. There is a gland on the outside of the

windpipe, but very loosely attached to it by cellular membranes, which has been named thyroid, from its supposed resemblance to a shield.

I have thought it probable that the use of this gland is to secrete a mucous fluid, which is conveyed by numerous excretory ducts, under the membrane of the larynx. These vessels pass down over the chink of the glottis, but under the laryngeal membrane, accompanied by numerous branches of the recurrent nerves. They are continued down the windpipe, and may be easily demonstrated in the cellular membrane between the cartilages and the tracheal membrane, especially at the back and superior part of the windpipe, where the cellular membrane is particularly large, and renders the membrane quite distinct from the cartilage. The method of demonstrating the use of the thyroid, or, as I shall in future name it, the laryngeal gland, is to inject the thyroid artery with ink. Its excretory ducts or vessels will then be seen in the situation I have just described, filled with ink. It will appear wonderful that the same membrane, such as the laryngeal and tracheal one, should be exquisitely sensible in one part, and wholly void of sensibility in another. But this will admit of a very simple explanation. In the larynx the membrane appears to be on the stretch, and extremely thin, especially at the chink of the glottis. By this contrivance the nerves are brought so near to the surface, as to render the part so irritable, as we observe it to be: and the same con-

trivance which renders it thus irritable, causes more of the mucous fluid to be thrown out for its lubrication and protection. This lubricating mucous fluid is changed, in certain states of the body, to one that is more or less acrimonious or irritating: hence arises the cough so common in horses.*

The heart is an involuntary muscle of immense power, that is, its motion is entirely independent of the animal's will. The muscles of respiration are not entirely, or wholly so, as the animal can suspend their action for a short period; but the muscles by which the body and limbs are moved are altogether voluntary, or dependent as to their motion, on the animal's will. The heart has two cavities, named ventricles; and two appendages, named auricles. The left ventricle of the heart is the residence of what is named arterial blood: and the right ventricle of what is named venous blood. The left ventricle is the origin of all the arteries, except that which is named pulmonary. The right ventricle is the origin of all the veins, except those which are named pulmonary, of which in the horse there are eight. These ventricles have valves withinside them, which enable them to perform their functions with that regularity which is necessary to the circulation of the blood, which passes from

* Cough may also depend on a dryness or deficiency of mucous fluid within the larynx, and a morbid sensibility of the membrane, so that it is irritated by the inspiration even of cold air, especially when it is moist, or mixed with smoke, or other stimulating vapours.

the left ventricle into the arteries, and the latter distribute it all over the body. The arteries are said to terminate in veins, and so they do; but with as much propriety may the veins be said to terminate in arteries, for they do so also; that is, the extremities of the arteries gradually terminate in veins, and those of the veins in arteries. There are some exceptions, however, that may be made to this view of the subject, which will be explained in the description I shall give of the arteries and veins. It is thus, then, that the blood circulates through the body, from the left ventricle of the heart through the arteries, and from the arteries through the veins to the right side of the heart. The blood, however, does not get into the right ventricle at once. It first fills that appendage I have noticed, named the right auricle, and this, by contracting, forces it into the ventricle. The ventricle again contracting, forces it into the pulmonary artery, which ramifying throughout the whole of the lungs, the extremities gradually terminate in the pulmonary veins, which return the blood that has been thus distributed through the lungs by eight trunks into the left auricle, which, contracting, sends it into the left ventricle. This is called the general circulation of the blood, but may be considered as two distinct circulations. In the fœtus there is only one circulation, because the lungs are not wanted, and therefore there is a direct communication between the two auricles, named foramen ovale. But soon after birth the lungs

perform their functions, blood is sent into them through the pulmonary artery, and having been renovated by the influence of the air which is inspired, returns by the pulmonary veins into the left auricle, and from thence into the left ventricle.

Besides the communication named foramen ovale, there is another between the trunk of the great artery, or aorta, and that of the pulmonary artery, named ductus arteriosus; but both these channels of communication are gradually closed after birth. This circulation through the lungs, named the pulmonary circulation, is one of the greatest importance; for if the blood is not thus renovated, or supplied with oxygen gas, it becomes unfit for a second circulation, and the body languishes and dies. The use of oxygen gas is, in the first place, to give heat to the body, which it does by gradually giving out its caloric in circulating through the arteries; and as the caloric is given out, the oxygen is applied to the muscular fibre in such a manner as to be the cause of muscular contraction; assisted, however, in a most essential manner, by that subtile fluid which is secreted by the brain, and distributed all over the body by means of the nerves.* Thus, then, it will appear that breath-

* The wonderful change which the blood undergoes by circulating through the lungs has been differently explained; and perhaps no theory that has been offered is perfectly satisfactory. From the experiments of Mr. Ellis, it would appear that the oxygen gas, which is inspired, is all expired again in combination

ing is not only essential to animal life and heat, but also to the perfection of muscular motion. And we always find, that when breathing is rendered imperfect and difficult by disease, as in asthma, or broken wind, there is a proportionate degree of muscular debility, and a deficiency of bodily heat. In speaking of the ventricles of the heart, some valves were mentioned which prevent the blood from taking a retrograde course. There are three in the left ventricle, the edges of which are connected by tendinous cords (cordæ tendinæ), to small fleshy eminences on the inside of the ventricle, called carneæ columnæ or fleshy columns. These tendinous cords are more numerous in the valves of the left ventricle than in the other parts, and being supposed with the valve to resemble a mitre, are named mitral valves. There are valves also in the right ventricle for a similar purpose, which are named tricuspid, or three-pointed; also in the great artery, or aorta, and in the pulmonary artery, where, having no cords, and resembling, or supposed to do so, a half moon, they are named semilunar.

The heart is inclosed in a strong membranous bag, which is named pericardium, and this incloses

with carbon and hydrogen. It is sufficient, however, for all practical purposes to know that breathing is essential to life and health, and that any impediment to respiration must be injurious to the whole body. Animal heat, as it is termed, seems to be dependent, in great measure, upon the nervous system, and cannot, perhaps, be satisfactorily explained or accounted for.

also the trunks of the veins and arteries, as well as the appendages or auricles.

In describing the lungs it has been stated that they were composed of the branches of the windpipe and blood-vessels: the extremities of the branches of the windpipe terminating on the surface of the lungs, and having their orifices closed by the pleura. I have stated also in what manner this may be demonstrated. Now the branches of the pulmonary artery are supposed to pass through those imaginary air-cells I have spoken of, and there to imbibe, through their sides, oxygen gas, which they certainly have a power of separating from atmospheric air when taken into the lungs; not, however, in the manner usually described, but by the air-vessels and blood-vessels being applied side to side. Another process takes place in the lungs besides that of the absorption of oxygen gas by the blood; for the latter as it receives oxygen gives out carbon, which passes off with the aqueous vapour that is expired.* The whole of the inside of the chest is lined by a membrane which resembles the pleura, and where it is applied to the ribs and intercostal muscles, is named pleura costalis, or the pleura of the ribs; at the diaphragm it is named the pleura of the diaphragm. The chest is divided by a similar membrane into two parts, completely distinct from each other. The membrane which parts them is named

* The carbon that is expired is combined with oxygen, and is changed to carbonic acid gas.

mediastinum, and between the folds of this membrane lie the heart inclosed in its pericardium, the trunk of the windpipe, and the œsophagus. In each cavity of the thorax the principal lobe of each lung is situated. There are two smaller lobes, some portion of which is included within the folds of the mediastinum.

CHAPTER VII.

ON THE VISCERA OF THE ABDOMEN, OR BELLY.

The most important of the abdominal viscera is the stomach, which in the horse is of a peculiar structure, and considerably smaller than in any other animal of similar bulk and power. It is a strong muscular cavity, capable of considerable distension, as has been found on opening horses that have died of stomach staggers, in which disorder it has been found stretched to an enormous extent. In one instance I have known the stomach, with the hardened undigested food it contained, weigh more than sixty pounds. Sometimes it is distended with air to a considerable degree, as in indigestion or flatulent colic; but in the healthy state it is comparatively small, and of great strength. About one half of its internal surface is covered with a dense cuticular membrane, which lines also the œsophagus or passage leading to it. This part appears to be insensible, and is often found with botts attached to it, where these worms

appear to do no injury. But sometimes they change their situation, attack the sensible part of the stomach, and are productive of the most painful and dangerous diseases. (See *Worms.*) The internal surface of the horse's stomach, then, is unlike that of the other domestic animals, having only one half of it endued with sensibility. This part, however, is extremely sensible, and the original seat of many disorders.

The horse's stomach, though having nearly one-half of its internal surface lined with a cuticular membrane, and consequently insensible, has such a high degree of sensibility in the remainder, that it becomes frequently the seat of very serious disorders. Strong, and even poisonous medicines, have been often given to horses, especially such as have been glandered, by way of experiment, and with a view to ascertain their effects upon the body of the horse. But this has been done without sufficient consideration; for it should have been known, that experiments made upon the healthy stomach, for such is that of the glandered horse, cannot lead to any knowledge of their effects upon the same organ when diseased. It should also have been known, that the healthy stomach has been endued with a power of resisting poisons to a certain extent, which probably has been the cause of the little injury that has been sometimes done by arsenic, sublimate, and other poisonous medicines. I have found, however, in many cases where those medicines have been em-

ployed, that though no immediate ill effect has been observed, the stomach has been materially injured, and one or both kidneys considerably enlarged, and sometimes partially or completely disorganized. It is from this difference between the healthy and morbid stomach that medicines which were thought innocent have sometimes produced the most violent effects, and even sudden death. Cases of this kind have been noticed by Mr. James Clark and other authors. It may be thought, from the apparent simplicity of his diet, that the horse's stomach must be little subject to morbid affections from that source; but this is so far from being the case, that it is really more frequently diseased, and that through improper feeding, than the stomach of any other animal. Though the horse is a graminivorous animal, when we consider the simplicity observable in the structure of his digestive organs, it is but reasonable to infer that he is capable of bearing the change of diet which is necessary in order to make him useful, better than the cow, whose digestive organs are much more complicated. This is really the case; and it is only by the frequent distension of the stomach, by the immoderate quantity of hay and water that is generally given him, that it becomes disordered so frequently as we find it. What are the diseases, it may be asked, that are thus caused, and by what symptoms may they be distinguished? An unlimited allowance, or too large an allowance, of hay, and especially of bad hay, brings on a morbid appetite, both for food and for water: the large

bowels become loaded with excrement; and frequent distension, whether of the stomach or bowels, must of necessity produce weakness of those organs, especially the former; hence digestion and chylification are imperfectly performed, the blood becomes impure, respiration is materially impeded, and general debility must be the consequence. From this source we have cough, roaring, asthma, or broken wind, worms, indigestion, leading to flatulent colic, inflammation of the bowels, and death. That part of the stomach where the œsophagus terminates, is named the cardiac orifice; and here the insensible, or cuticular membrane, is loose, and puckered up into folds, so as to form a kind of valve, which renders the return of food extremely difficult; and vomiting is considered, on this account, as an act of which the horse is incapable. I have seen a horse vomit once, and once only; and it is well known that even air, however the stomach may be distended with it, as it often is in flatulent colic, cannot escape, or very rarely does so, by the mouth. The other part of the stomach, where the digested food passes out, is named pylorus. Here the small intestines begin, which may indeed be considered as a continuation of the stomach, as the absorption of chyle is probably going on throughout the whole of their extent. The small intestines may be considered as the alimentary canal, and the large intestines as the excremental canal. One of these, however, the cœcum, has been considered as serving the purpose, in some degree, of a second stomach. The alimentary canal is di-

vided, nominally, into three parts,—the duodenum, the jejunum, and the ilium. However useful this division may be in human anatomy, it can serve no purpose whatever in the horse. The alimentary canal of a middle-sized horse is about twenty-two yards in length, and the excremental canal about eight. These last, however, are extremely large in the horse, and occupy more room in the abdomen than the alimentary canal, and may therefore be properly enough named the large intestines, which are also nominally divided into three parts, viz. the cœcum, or blind gut; the colon, probably from its being supposed to be the seat of colic; and the rectum, or straight gut. The alimentary canal is coiled round, so as to occupy as little room as possible, and is confined in that situation by a membrane named mesentery, which serves as a bed also for the lacteals, or chyle vessels, and for the mesenteric artery and vein. The alimentary canal terminates abruptly in the cœcum, something like the following cut, which is not given

as a correct representation, but sufficiently so as to enable the reader to understand the manner in

which the alimentary canal terminates. *a* represents a portion of that part of the alimentary canal named ilium, which has been cut off at *a*; *b b* the cœcum; *c* its blind end; *d* the part where it has been cut off from the colon; and *e* the part where the ilium enters the cœcum.

On examining the inside of this gut, the cœcum, the part where the ilium enters, will be found closed up by the internal coat being loose and in folds, something like the part where the œsophagus enters the stomach. This kind of structure serves as a valve, and prevents the return of the excrement into the alimentary canal. It is necessary that the reader should bear in his memory the structure of this part; for in flatulent colic, in addition to the resistance made by this valvular structure to the escape of the air which is generated in the stomach and alimentary canal, the cœcum is often so loaded with excrement as to render the escape of air impossible without the assistance of clysters, which, if *properly administered*, will completely empty the cœcum and large bowels in general.

Where the rectum terminates there is a strong circular muscle, named sphincter ani, by which it is always kept shut, except at the times when the excrement is voided, when it is forced open by the contraction of the abdominal muscles, and the descent of the diaphragm.

The next abdominal organ to be considered is the liver, the form of which is too well known to

require a description. Its office is that of purifying the blood which has been distributed to the stomach and intestines, and this it does by separating from it a fluid named bile, which is poured out by its excretory duct into the superior part of the alimentary canal. In all other quadrupeds, except the horse and the ass, there is a gall bladder, where the bile or gall is deposited, and may remain until it is wanted; but in the horse the liver is of more simple structure, and the bile is constantly poured out into the alimentary canal as it is secreted, by one duct, which may be named the hepatic or biliary duct. From this simplicity of structure it is that the horse seldom has the bile duct obstructed by concrete bile, or gall-stones; he is subject, however, to yellowness of the eyes and mouth, from a morbid condition of the digestive organs, and parts subservient to them. The spleen, or milt, is a spongy or cellular body, annexed to the stomach, and serves as a depository for the venous blood of that organ. The cellular texture and distensibility of the spleen admirably adapt it to the office it was designed for, being thereby enabled to contain a great quantity of blood when the liver is not in a condition to receive more than it already has; the spleen then serves as a reservoir, and sends it to the liver, when it becomes capable of disposing of it, that is, of separating bile from it. The blood that is distributed to the intestines is brought to the liver by the mesenteric veins. The bile, from being

poured out so near the stomach, may be considered as being of some use in the separation of the chyle; but this probably is not the case; it may be excrementitious entirely, and serve only to stimulate the bowels.

The pancreas is an important gland, situated upon the spine, and immediately under the first of the small intestines, named duodenum. No particular use has been ascribed to it, or rather to the fluid it secretes, which resembles saliva, and is conveyed by the pancreatic duct into the duodenum, close to the termination of the hepatic, or bile duct. From this circumstance it may be supposed to serve the same purpose as the bile; but this, I think, is not the case. It is not excremental, but forms a constituent part of the chyle. In quadrupeds designed for food there is often a deficiency of pancreas, and when they are fattened it will be sometimes nearly obliterated, and the small duct that remains will be found terminating in the hepatic duct, with scarcely any fluid in it. In animals, therefore, that are designed for food, the quantity of pancreatic juice is but small, and there is consequently a peculiar tendency to the formation of fat.

The kidneys are two excremental glands, situated upon the psoæ, or lumbar muscles, as they are termed, or muscles within the body, which assist in bending the thigh upon the pelvis. The right kidney is loosely attached to the great lobe of the liver, as well as to the right psoas muscle;

the left kidney is three or four inches farther back, and nearer the bladder, attached only to the left psoas muscle by cellular membranes. They separate the urine from the blood, and are therefore of great importance in the horse; for his blood, owing to the improper manner in which he is generally fed, is often loaded with excrementitious matter, which, if not carried off by the kidneys, is thrown upon the mucous surfaces, and becomes the cause of many troublesome disorders. The urine is conveyed from the kidneys to the bladder by two tubes, named ureters, which enter the bladder, obliquely passing between its coats for three or four inches before they open into it. By this contrivance the urine is effectually prevented from returning. The cavity named pelvis, or basin, is separated from the abdomen by the membrane named peritoneum, which encloses all the abdominal viscera, and is considered as forming also their external coat. The bladder has only its anterior part, or fundus, in the cavity of the abdomen, and covered with peritoneum; the posterior part, with the neck, is in the cavity of the pelvis. The vesiculæ seminales are attached to the neck of the bladder in the form of two bladders, and when distended they have resembled smaller bladders: it is from this circumstance that a horse has sometimes been supposed to have had three bladders.

CHAPTER VIII.

ON DIGESTION.

By digestion is meant that process by which the food, or certain parts of it, are converted into a white fluid, resembling milk, named chyle. To render it fit for this process, which is performed by the stomach, it is necessary that it should be perfectly masticated, and mixed with saliva. Supposing, then, that the food is of good quality, and in sufficient quantity, a defect in the organs of mastication, a deficiency of saliva, or a want of vital power in the stomach, must render the process imperfect, and the chyle formed by it unfit for the purposes for which it was designed, that is, the formation of pure blood. Mastication is often rendered painful, and consequently imperfect, by a defect in the grinding teeth, that is, by keen edges, or sharp points, being formed in the upper grinders, which wound the cheeks, and sometimes cause deep ulcers in them. Horses that are constantly fed on dry food, and never allowed grass, are those in which this defect happens. The upper and under grinders do not meet each other horizontally, but have an oblique inclination inwards; and those of the upper jaw are more distant from each other than the grinders of the under jaw. By this arrangement the food, as it is

ground, falls inward upon the tongue. The inside of the upper grinders, when worn down nearly to the gum, as happens frequently in horses of the above description, allows the corn to fall into the mouth, or some portion of it, before it is masticated, and this is generally swallowed unbroken. The horse, feeling sensible of this defect, tries to throw the wear upon the outer edge by an inclination and peculiar motion of the jaws, which the French express by the phrase "faire les forces." In doing this he often wounds the cheek with the upper grinder, which, in this case, is always worn to a very keen edge. The cheek inflames and swells, and becomes still more liable to injury. In this way a permanent thickening of the part takes place, and not unfrequently deep ulcers. From this cause a horse swallows a considerable portion of his corn without chewing it; and, such corn being indigestible, is always voided with the dung. This defect may be remedied for a time by rasping the outer edges of the upper grinders with a concave file made for the purpose. Whenever corn is found in the horse's dung, there is reason to suspect the existence of this defect, but sometimes a horse will swallow corn unchewed merely from eagerness in feeding, Filing the teeth does not, however, afford permanent relief; for, if a horse is again fed on corn, the teeth soon wear to a sharp edge again, and the injury is repeated; and, though filing off the sharp points prevents him for a time from wounding his cheeks, it does not

prevent the corn from falling unchewed into his mouth and from being swallowed in that state. There is not, however, so much difficulty in masticating hay, provided the animal is allowed sufficient time; since it does not so readily fall into the mouth until it has undergone considerable mastication, and then it is more readily placed under the grinders again by means of the tongue. Even the hay is at length masticated with great difficulty; and, after being kept in the mouth a considerable time, is thrown out into the manger rolled up like a chewed quid of tobacco. Such horses are named by dealers *quidders;* and, unless fed upon bruised oats, or soft food, must be starved. In such cases the muscles of deglutition, or swallowing, are more or less paralysed, so that, if the animal is turned out, the grass will return through his nose instead of being swallowed, and he will be starved to death. Horses that have defects in their grinders should be fed with bruised oats, grains, bran, or other food that does not require mastication. When a horse is at grass there is a sufficient supply of saliva for the purposes of mastication, swallowing, and digestion; but, when he is taken into the stable, and fed upon dry food, there must, of necessity, be a deficiency of saliva; the only method of compensating for this deficiency, and rendering the food as fit as it can be made for mastication, swallowing, and digestion, is to dip the hay in water, and make the corn quite wet. This should never be omitted. There is one cause

of imperfect mastication, however, which should not be permitted to happen in the stable, but often does happen, that is, dentition, or cutting teeth, especially when a horse is changing his grinders, which he does between the third and fifth year. A horse ought to be kept out during great part of this period; and, if he is kept in, he should have soft food when he is observed to chew with difficulty. A want of vital power in the stomach is a disease that exists in the horse more frequently than people are aware of, and depends wholly upon improper feeding, assisted, however, too often by immoderate work. By improper feeding is meant the quantity and quality of the hay that is commonly given. This injures the stomach, not only by its deficiency in nutritious matter, and by the impure chyle generated from it, thereby leading the animal to eat a greater quantity than he otherwise would, but even the distension which the stomach suffers does it a serious injury, and, by rendering respiration difficult, weakens the whole muscular system. For when a horse is constantly fed in this way, not only the stomach, but all the large bowels are loaded, and the diaphragm is, in a considerable degree, prevented from performing its office.

CHAPTER IX.

INFLAMMATION.

Inflammation is a disorder of the blood-vessels depending upon their having too much blood in them, or upon that blood being impure and acrimonious, or upon the blood-vessels themselves being in a diseased state. In describing the heart, which is the principal blood-vessel, or rather the origin and termination of all of them, the arteries were not included in that description: they are said to be composed of three coats, an external or elastic, a middle or muscular, and an internal or cuticular coat. This, however, according to some physiologists, is not the case; all the arteries, except the capillaries, are said to be composed entirely of elastic matter, which, being distended by the blood forced into them by the contractions of the heart, in returning to their natural state, propel the blood forward. This swelling of the artery constitutes the pulse, and is indicative of the three states I have named or described; viz. the quantity of blood in the vessels, the quality of that blood, and the state of the heart and the blood vessels. By blood-vessels I do not mean those only that are named arteries, but the capillaries also, as they are named, which, though they do not convey red blood, convey that which is without colour. The capillaries are different from

the arteries; they are muscular tubes of great strength, and are affected by the same causes which affected the heart, that is, they are materially influenced by the state of the brain and nervous system. If the brain, or nervous system, is exhausted by excessive exertion, the heart participates in the injury; so do the capillaries, and the whole muscular system must of necessity suffer also. Hence the stomach, being muscular, participates in the injury, and this important organ, when so affected, re-acts upon the nervous system, and thus the disease is aggravated. Inflammation, then, is a disease of considerable importance, and the cause of many serious disorders in the horse. As inflammation may depend upon different causes, it may be thought that the treatment also must differ; but this is not the case. The treatment is always essentially the same, varying only according to the animal's strength, and consists in copious blood-letting. Cool air is always of service in inflammatory diseases, and cold air is sometimes still better; even turning the horse out, if the weather is dry, is perhaps the best situation of any. Inflammation may be general or local. General inflammation is fever, of which there is but one kind in the horse, and that may almost always be cured by early and copious bleeding. In fever the vital organs are differently affected; most commonly the lungs are the parts that suffer most; sometimes it is the brain, the intestines, or some other vital parts, in which the disorder is most

conspicuous; but it is always essentially the same, and requires nearly the same mode of treatment. Local inflammation is more various in its appearance, and will be described under the names of those diseases in which it occurs.

CHAPTER X.

FEVER, GENERAL INFLAMMATION, OR SYNOCHUS.

It has been observed, in the foregoing chapter, that general inflammation constitutes fever; and it has also been stated that fever is produced by different causes; these causes were likewise pointed out; but I shall now speak of them more particularly. That kind of fever which depends upon excess of blood is generally produced by taking up a horse from grass, and putting him suddenly into a warm stable upon oats and hay; or by feeding a horse high, and giving him little or no exercise. Fever thus produced is always to be cured by early and copious bleeding, that is, by bleeding until faintness is produced; for which purpose it is generally necessary to take off from one to two gallons, and sometimes more. I have known a case of fever of the brain, or phrenitis, commonly called mad staggers, in which four gallons of blood were taken off in the course of two or three hours with the best effect. In cases of general inflammation. in horned cattle, I have known a small pailful

of blood taken off, and the animal has always recovered when it was done in season. Medicine is of no use in this disorder, unless it is caused by an acrimonious state of the blood and humours, and then it will be useful.* Before I proceed to a description of those inflammatory affections of the vital organs, which have been denominated symptomatic fever, it appears proper to make some observations on what has been named the Humoural Pathology. By this term is meant that doctrine or explanation of diseases which attributed them to a morbid state of the blood and humours. In speaking of the digestive organs it was observed that, when the stomach was disordered by a continuance of unwholesome feeding, that is, by giving bad hay, or too much even of good hay, the chyle is of a bad quality, and that consequently the blood is imperfect, and the nervous system weak. If the blood is impure, and the nervous system

* Inflammation of the lungs is sometimes produced by over-riding a horse; and, in this case, there is often such an exhaustion of the vital power that the animal dies, however judiciously he may be treated. By the term *over-riding* is to be understood riding a horse beyond his strength, and this may sometimes appear very moderate riding to an inconsiderate or an unfeeling rider. I have known horses destroyed in this way, that is, by being ridden only a moderate journey at a time when they were unwell, and consequently unfit for it. In such cases there is always considerable debility, indicated by feebleness, or staggering in walking, some degree of stupor, and great redness of the inner membrane of the eyelids. Early bleeding is of the greatest importance in these cases; emollient clysters, and blistering the sides, may also be of use.

low or irritable, the heart and arteries will be excited to increased action, in order to get rid of the impurities, which may be so considerable as to constitute fever; for the impurities are of an acrimonious nature, and are thus thrown off upon the mucous surfaces and by the kidneys. The mucous fluid, or *humour*, which in the healthy state is bland and lubricating, becomes now saline and acrimonious. It is in this way that disorders are often produced, and such disorders may truly be said to depend upon an impure and acrimonious state of the blood and humours. Suppressed perspiration may, in the human body, be a frequent cause of this state of the blood; but it is not so in the horse. In this animal perspiration is not readily produced, unless it is by violent exercise; and should such perspiration be checked by cold, it is readily carried off by the kidneys, which, in the horse, appear to be the natural outlet for such impurities; but when the chyle is constantly impure, from a morbid condition of the stomach, and a consequent depraved appetite, the kidneys are unequal to the carrying off of the impurities thus generated, and the mucous surfaces become affected, especially that of the larynx, the windpipe, and its branches. Even the most severe catarrhal complaints may be thus produced, and then the nostrils become an useful emunctory for the discharge of impure mucus, and other acrimonious matter. The cause of this not happening more frequently than it does, is, that the acrimonious

matter is of a diuretic nature, and therefore most commonly carried off by the kidneys; and it is thus that these organs in the horse are so often found enlarged and otherwise diseased, more frequently than is suspected or known perhaps: and what contributes in no small degree to this injury of the kidneys, is the very common practice of frequently giving diuretic medicines to carry off impurities, without removing the source of such impurities—that is, an excessive quantity of hay, and that generally of bad quality. That morbid condition of the stomach which causes a depraved appetite, cannot be speedily cured; but it may often be cured by persisting in the use of a moderate and proper diet, as described in the Chapter on Feeding.*

* The too common practice of keeping horses in hot stables, and clothing them with thick rugs, renders their skins delicate, and often very susceptible of the impressions of cold, and especially of cold and moisture. In such horses there is a considerable discharge of excrementitious matter constantly going on from the skin, particularly when the animal is exercised. If this discharge is suddenly checked, either partially or wholly, there will be an undue determination of blood to the interior parts proportionate to the extent of the perspirable surface which has suffered. As the blood thus unduly determined inwardly will be loaded with excrementitious matter, by a provision in the animal economy, it will be thrown chiefly upon the mucous membranes, and upon the kidneys. The kidneys afford a ready outlet to it; and next to the kidneys the mucous membrane of the bowels carries it off with least injury to the body. But breathing is so essential to life, that if it fall chiefly upon the mucous membrane of the lungs, and parts connected with them in the important office of respiration, suffocation will often

CHAPTER XI.

INFLAMMATION OF THE BRAIN.—BRAIN FEVER.—PHRENITIS.—FRENZY.—MAD STAGGERS.

THIS disorder is generally occasioned by overfeeding and too little exercise. It may arise, however, from the irritation of botts in the stomach also. The first symptoms,—and these often escape notice, are heaviness, redness of the membranes under the eyelids, want of appetite, and disinclination to motion; but the symptom most

be the consequence, unless timely relief is afforded. The indications of cure are: 1st. To relieve the heart and lungs by lessening the quantity of blood in the body; to encourage a determination to the kidneys and mucous surface of the bowels by giving clysters and saline laxatives; and to restore the perspirable discharge, not by hot clothing or a hot stable, but by placing the animal in a cool air, brushing him well, and clothing him moderately. It has been thought, indeed, that even turning the horse out into a field is the best plan when the weather is favourable; and this I am inclined to believe is really the case. The best laxative is Epsom or Glauber's salt, given twice or three times a day in a dose of 8 or 10 ounces. This will act both upon the kidneys and the bowels. The blood may become foul, as it is commonly but properly enough termed, not only by a suppression of the natural discharges of the body, but also by a continuance of unwholesome feeding. In this case the skin, the kidneys, and the bowels, may not be sufficient for carrying off all the excrementitious matter from the blood, and a considerable quantity is thrown upon the lungs. Hence arise coughs, wheezing, or asthmatic affections, or defective wind, and sometimes even discharges from the nostrils resembling glanders. From the same cause proceed worms and disorders of the skin.

commonly first observed is delirium, or madness. The horse becomes violent, plunges about the stall, endeavours to bite those who approach him, or the horses that happen to be near him. A horse has been known to leap out of a small window when affected with this disorder; and he is sometimes so violent as to drive every one out of the stable. Sometimes he falls down exhausted, and after lying for a time, gets up suddenly and becomes as violent as ever. The treatment, and the only treatment required, is immediate and copious bleeding; that is, bleeding until the animal is perfectly free from delirium, and this seldom happens until from two to three gallons of blood are taken off. I have known four gallons taken off at one time, and the horse recovered in consequence. If the fit should return, he must be bled again, until the disorder ceases. As soon as the horse becomes quiet, a dose of physic and clysters should be given. No other medicine is required. After the horse is recovered he should be kept to a spare diet for some time; grass is the best. The jugular veins are the vessels from which blood should be drawn in this disorder, and if both are opened it will be better. After the veins have been opened, it is usual to tie a cord round the neck, by which the bleeding will be kept up without the necessity of standing near the horse. There is no occasion for measuring the blood.

Bleeding from both of the temporal arteries

at once has been practised in preference to the jugular or neck veins, and I have recommended the practice.

Stomach staggers, though not a primary affection of the brain, like phrenitis, or mad staggers, and apoplexy, not only requires bleeding, but copious bleeding, and that too as early as possible. Still, however, in stomach staggers, the stomach must be a principal object of attention; for, unless the hardened undigested food be removed from it, it will lose its vitality, and the animal will die. (See *Stomach Staggers* and *Apoplexy*.)

I have seen cases where the abstraction of arterial blood has afforded relief, after bleeding from the jugular vein had failed; and, it is probable, that when there is considerable delirium, *arteriotomy*, as bleeding from arteries is termed, would be found the most effectual practice. The temporal arteries may be felt about two inches from the outer corner of the eye: by placing, or rather pressing, the fingers upon this part, they may be distinguished by their pulsation or throbbing. Into this part a lancet is to be plunged freely and without fear. I knew an experienced farrier who used to open the large artery near the basis of the tail, the same that is cut sometimes in nicking, and often with success. It may be found near the middle of the under part of the tail, about three or four inches from the rump.

Phrenzy generally happens to young vigorous horses, whose veins do not so readily burst as

those of old horses, which are generally the subjects of apoplexy and stomach staggers. The early age, however, at which horses are often worked, and the immoderate degree in which they are worked, often makes them old in constitution when young in years, so that even young horses may become the subjects of apoplexy.

CHAPTER XII.

INFLAMMATION OF THE LUNGS.—PLEURISY.—PERIPNEUMONY.—PLEURITIS.—BRONCHITIS.

THIS disorder most commonly occurs when horses are first taken into the stable from grass, especially when this change is made suddenly. It may occur also by feeding a horse high, and giving him but little exercise. Hot stables materially contribute to its production, and, when it does occur, are often the cause of its terminating fatally. The previous symptoms, and these should always be attended to, are dulness, heaviness, disinclination to motion, diminished appetite, redness of the inner membrane of the eyelids, oppressed breathing, and quick pulse. If the animal is not copiously bled at this period, all the symptoms rapidly increase. The breathing becomes quick and laborious, as may be seen by the motion of the flanks and nostrils. There is a peculiar appearance of anxiety and distress in the animal's countenance: the extremities become cold; the

horse becomes extremely feeble, and moves with difficulty; he is unable to lie down, or, rather, to breathe in that position; at length he drops down, and then soon dies. Sometimes the symptoms are rather complicated: there will be an appearance of griping pain, but unlike the violent pain of flatulent colic. Sometimes there will be a frequent inclination to stale, but the urine will be voided with some degree of pain and difficulty; and the small quantity that is voided will be of a high colour, or bloody. There is seldom any dung voided, and, when there is, it is generally in small hard knobs, sometimes covered with slime resembling grease. There is seldom any cough, unless it is complicated with catarrh, a disorder that will be noticed hereafter. Bleeding is the essential remedy, but is seldom performed with sufficient freedom or sufficiently early. The quantity drawn at first should seldom be less than from six quarts to two gallons. If the horse faints before this quantity is taken off, the only inference to be drawn from it is, that a sufficient quantity has been taken for that time; but when the faintness goes off, which it will soon do, if the symptoms continue, or begin to rise again, he must be again bled until they subside. No danger whatever need be apprehended from this copious bleeding, and fainting is a circumstance of no importance. Thousands of horses have been lost in inflammatory affections of the vital organs, by the needless dread of bleeding profusely, or from an unfounded apprehension

of the debility that is expected to follow such copious evacuations of blood; but they are necessary, and must be submitted to, if the preservation of the animal's life is the object that is to be accomplished. Whatever weakness may follow can always be remedied by rest and careful feeding. Soiling, or a run at grass, on such occasions, is highly desirable.

The most dangerous cases of peripneumony are those produced by over-riding a horse, or riding him at a time when he is unwell and unfit for work. In such cases the vital power is often so exhausted that the animal dies under the most judicious treatment; and in these cases, early and free bleeding is just as essential as in all other cases; but we often find that after bleeding to faintness, the inner surface of the eyelid continues very red; and if the horse is led out of the stable, he appears to ramble or stagger in his walk, from the debility he labours under. When inflammation of the lungs terminates in dropsy of the chest, it is always, I believe, from a neglect of early and sufficient bleeding.

The public is much indebted to Mr. Coleman for an important improvement in the treatment of inflammation, whether purely inflammatory or catarrhal. It is the latter kind of pulmonary affection that I have most commonly met with of late, in the form of violent colds, quincy, distemper, influenza, or epidemic catarrh, and catarrhal fever, all which are different degrees of the same dis-

order; and, according to Mr. Coleman, they all do best when the animal is turned out into the open and cool air. The practice of keeping horses warm in those disorders is so prevalent, and considered so essential a part of the treatment, that I have scarcely ventured, as yet, to carry it further into practice than to make the stable as cool and airy as possible; avoiding, however, exposing the animal to a partial current of cold air. I am satisfied, however, from circumstances that have come to my knowledge, that it is a good practice, and ought always to be adopted. In inflammation of the lungs, then, horses should be always turned out after having been bled sufficiently and clystered. Medicine is of little importance, and indeed none is required, unless the disorder is complicated with catarrhal symptoms, symptoms of obstruction in the bowels or urinary organs, or botts in the stomach. For directions in such cases the reader is referred to those disorders. Blistering the sides when there is not sufficient strength left to admit of further bleeding, is necessary; bleeding and cool air, however, are the chief remedies. As to diet little need be said. When the appetite returns, it may be considered a sign of recovery, and then he must be fed carefully. Green food is the best; and when that cannot be had, a moderate quantity of bran mashes may be given; a small quantity of the best hay may also be allowed; but corn must be given sparingly, and in proportion only to the

exercise he is capable of taking with advantage. Writers on medicine have made a distinction between the inflammatory affection of the serous membrane of the lungs, or *pleura* of the bronchial, or mucous membrane of the lungs, and of the whole substance of the lungs; naming the first, Pleurisy, or Pleuritis; the second, Catarrh, or Bronchitis; and the third, Peripneumony. This distinction, however, as it regards the horse, is unnecessary. The one quickly runs into the other, unless the first attack is soon removed by bleeding, and the whole pulmonary system, even the right side of the heart, and pulmonary artery, participates in the affection.

CHAPTER XIII.

CATARRHAL INFLAMMATION OR FEVER.—BRONCHITIS, VIOLENT COLD, OR CATARRH.—QUINCY.—-EPIDEMIC CATARRH.—-INFLUENZA.—-DISTEMPER.

All these are different degrees of the same disorder, beginning with a cold or catarrh, and proceeding to that high degree of catarrhal inflammation, named distemper, or epidemic catarrh. This disorder arises from different causes, and is brought on, in some cases, by the sudden application of cold and moisture when the body has been heated, and somewhat exhausted, by excessive exercise.

It arises also from a peculiar state of the atmosphere, and then, of course, it is epidemic. It is of little importance in this case to know whether it be infectious or not; for if it depends on a certain state of the atmosphere, that state must prevail to a considerable extent. The symptoms of this disorder are, violent cough, dullness, heaviness and watering of the eyes, quickness of breathing, running at the nostrils, sore throat and difficulty in swallowing, quick pulse, and general weakness. These are the symptoms which occur in various degrees; and from this circumstance the disorder has obtained different names. The treatment consists in bleeding, and placing the horse in a cool atmosphere. The prevailing practice of keeping horses warm in this disorder does much mischief; but if clothing must be continued, let the stable be kept as cool as possible. A paddock is certainly the best situation, as the horse may there take as much exercise as is salutary; and if this cannot be had, a cool box, or some outhouse, should be chosen. Copious bleeding is in this case also an essential remedy, and the earlier it is done the better. Though slight catarrhal affections may sometimes yield to moderate bleeding, disappointment and an increase of the disorder will more frequently result from it. Bleeding plentifully therefore should always be practised, in whatever degree the disorder may occur. By this treatment it will be speedily subdued, and require no medicine whatever; nature will then accomplish the

cure, especially if the horse is turned to grass, or into a paddock, or some open place, where the morbid matter will run off freely; and thus the blood will be restored to a state of purity, and the body to a state of health. It is not advisable, however, to leave the case wholly to nature after sufficient bleeding, unless the animal is kept in a paddock, or a large cool box, or outhouse, where he can move himself about freely, and eat nothing but green food. Most commonly, however, there is no convenience of this kind, and it is absolutely necessary to keep the horse in a stable, and upon hay and bran. In such cases it is of importance to do something in order to assist nature in carrying off the morbid matter; for the mucous surfaces being the parts on which it is chiefly thrown, the pulmonary system is often much injured by the saline acrimonious matter that is thrown upon it: the nostrils also have been often ulcerated by the acrimony of the matter which they discharge. It is of importance therefore to make a diversion in favour of the mucous surfaces, by keeping up an increased action in the kidneys and bowels: through these emunctories the greater part of such matter may be easily, and safely, discharged. There is only one medicine required for this purpose, and that is nitre, now named nitrate of potash. The quantity to be given daily is from one ounce and a half to two ounces, which must be divided into three equal parts, one to be given early in the morning, another at noon, and the third at night

The state of the bowels must be attended to; but as the horse's diet will consist either of green food or bran mashes, clysters will be sufficient to keep them open, and they should never be omitted. There is no necessity for a rowel under the jaws, or in the chest; but in cases where the essential remedy has been omitted or delayed, rowels or blistering the sides may certainly be useful. When this disorder has been subdued, there will generally be a considerable degree of debility; but there will be great danger in attempting to recover his strength hastily by means of corn. Green food is by far the safest diet, and when corn is given it must be with great caution, and in small quantities; for unless the digestive organs have recovered their health it will oppress the stomach, be imperfectly digested, and prove a fresh source of impurities in the blood. The nitre should be continued until the horse is restored to health: it is the best and the most innocent diuretic that can be given on this or any other occasion.

I have been informed by a correspondent, who appears to be an experienced practitioner, that when a catarrhal disorder prevailed in Ireland, and carried off a great number of horses, he was particularly successful in his treatment of the complaint, which consisted in giving eight or ten ounces of Epsom or Glauber's salt twice or three times a day. Either of these salts, given in this manner, will act freely on the kidneys, and moderately only on the bowels; and I am satisfied that

it is a judicious mode of treatment. I have often observed in the course of catarrhal disorders, and especially when they are epidemic, or rather epizootic, and are therefore named *distemper*, that when the horse appears to be doing well, he is unexpectedly, and often suddenly, worse again, and apparently in danger. This is often caused by drenching him too freely with gruel, or giving him corn. Whenever this happens, the horse should be bled freely immediately, and be more carefully fed. I have found it necessary to bleed a horse three times on such an occasion.

During the present year and some part of that which preceded it, a very obstinate catarrhal complaint has prevailed, which exactly resembles glanders, except in the circumstance of not being contagious,—that is, as far as my observation has gone. There have been ulcers in the nostrils, and a hard swelling of the submaxillary glands, as in glanders. The remedies usually employed in catarrh did no good, but a dram of sulphate of copper made into a ball with linseed powder and treacle, and given twice a day, proved in many instances an effectual remedy. I have sometimes had occasion to increase the dose to two drams twice a day; this in a few days often made the mouth sore and lessened the appetite; the medicine was then discontinued a few days.

CHAPTER XIV.

INFLAMMATION AND OTHER DISEASES OF THE STOMACH AND BOWELS.

Inflammation of the Stomach, Gastritis.

Acute inflammation seldom takes place in the stomach but from swallowing poisons, or some powerful stimulant, at a time when this important organ is already in a morbid or irritable state. Mr. James Clarke relates a case where a horse was destroyed by inflammation of the stomach, in consequence of being drenched with a pint of vinegar; and another in which the same fatal effect was produced by a drench which contained half an ounce of spirit of hartshorn. It is probable that neither of these drenches would have had any injurious effect had the stomach been in a healthy state. I have known a horse quickly destroyed by being drenched with a quart of beer in which one or two ounces of tobacco had been infused, and have seen other horses take much larger doses without any ill effect. I have known a drench which contained two ounces of ether destroy a horse by inflaming his stomach; and in one instance four ounces of oil of turpentine produced a similar effect; but this horse was under the effect of a moderate purgative at the time the turpentine was given. Whenever a medicine produces an inju-

rious effect upon the stomach, I think it is generally indicated by the shivering, shaking, or trembling which immediately follows. I have seen a strong infusion of tobacco produce this effect; also a solution of arsenic. I gave several doses of arsenical solution to a glandered horse, and it was invariably followed by shivering; it was a large dose, from two to four ounces of Fowler's solution. The shivering went off in about an hour. At first I gave the horse a little warm beer, with some ginger in it, to stop the shivering, but afterwards I suffered it to go off of its own accord. It is worthy of remark, that although this horse did not appear to be injured by the arsenic, but continued in good condition, and in good spirits, yet some time after, when it was necessary to destroy him, upon examining the body after death, the stomach appeared in a morbid state and the spleen considerably enlarged. From these, and many other circumstances of a similar kind, it appears that, although acute inflammation does not often take place in the stomach, yet a chronic kind of inflammation, or some other morbid state, is by no means an unfrequent occurrence. I am inclined to think that botts disorder the stomach in this way more frequently than is generally suspected. The symptoms of acute inflammation of the stomach are, a very quick and weak pulse, great depression of spirits, quick breathing, and coldness of the ears and legs. I have seen all these symptoms brought on by giving four ounces of nitre at one dose. I

have seen it produced also by large doses of sublimate, arsenic, and blue vitriol. The best antidote to sublimate, arsenic, and blue vitriol, is a solution of soap, and an infusion of linseed or flaxseed. Liver of sulphur has been recommended. A little arrow-root gruel, or a solution of gum Arabic, may also be of use. Bleeding is necessary. When an over-dose of nitre has been given, linseed infusion is the best remedy. When there is reason to suspect that the stomach is suffering from botts, castor or olive oil should be given. Clysters of warm water and oil may be thrown up. When the horse begins to recover, he must be fed carefully and sparingly. Mashes, perhaps, are the best food, with a little ground malt or ground oats in them. Young tender vetches, lucerne, or grass, may likewise be of service. With regard to the other diseases of the stomach, it is probable they are brought on chiefly by over-feeding with hay. When young horses are kept much in a stable, with a rack full of hay before them, they eat merely for employment, and thus gradually stretch their stomachs, and acquire a proportionate increase of appetite, which after a time becomes craving or voracious, and in that case it always loses its natural delicacy, and becomes more or less depraved: such an appetite is always accompanied with thirst. I have known such a horse drink from a barrel of pig's wash after being kept without water for a few hours; and a hellier's horse was once brought to me with his mouth very sore and inflamed from drinking

some whitewash that had been just prepared from slaked lime. Horses acquire a relish for human urine, even when stale and offensive; I know a farmer who is in the constant practice, and has been so for many years, of giving his horses all the urine of the family with their corn; and I was informed by a person whose veracity I have no reason to doubt, that he saw a horse drink stale urine with avidity, which was saved for the purpose in a cask, when it was so sffensive upon being stirred, that he could not bear to come within several yards of it. The trash a horse eats when the appetite is vitiated not only disorders the stomach and breeds worms in the bowels, but injures the wind also, and debilitates the whole muscular and nervous system. Hence arise a great variety of symptoms, so numerous and so diversified that it is difficult, perhaps impossible, to arrange them under distinct heads or denominations; and the best way of considering them is as disorders depending on a morbid condition of the *digestive organs* or *digestive system*, that is to say, of the stomach, bowels, and liver; probably the spleen and pancreas should be included also, brought on by improper feeding. This view of the subject leads us both to the cure and the means of prevention.

I have seen horses kept in the best condition, and fit for any work, upon eight pounds of hay in the day and night. I have known others that have eaten from twenty to thirty pounds in that time,

and have been scarcely fit for any work, being generally more or less asthmatic, sluggish, and weak. A horse's appetite is too often considered a sufficient criterion for determining the quantity as well as the *quality* of the hay that is most fit for him; but it should always be recollected that many horses will eat three times more than will do them good, without any regard to the quality, and if kept short of hay will eat the filthiest litter. Young horses should not be suffered to acquire this morbid appetite; they should be kept at grass, and worked accordingly, till they are five years old. When kept in a stable they should have regular employment. Idleness is the ruin of young horses in every way; it makes them mischievous, and unwilling to work when wanted. If left much in a stable without having something to eat, by way of employment, they will get a habit of playing with the rack and manger, and at length become crib-biters; so that the only way of keeping them from bad habits, and from injuring their stomachs, is to work them regularly, and in a degree suitable to their age and strength, or to keep them at grass.

Inflammation of the Bowels, Red Colic, Enteritis, Peritonitis, and Peritonæal Inflammation.

These different names have been applied to inflammation of the bowels; but different parts of the bowels may be affected separately. When the external or peritonæal surface is affected, the disease

is named peritonitis, or peritonæal inflammation; and when the internal or mucous surface is affected, it is named enteritis, or inflammation of the bowels, dysentery, or molten grease. Peritonæal inflammation is generally occasioned by a sudden change from grass to the stable, or by metastasis, as it is named, that is, by the striking in of the disorder from the skin to the bowels, in endeavouring to cure mange by corrosive sublimate, or by endeavouring to promote the condition of a horse too hastily when very thin and weak, by means of corn, or by immoderate feeding. The first symptoms of peritonæal inflammation are heaviness, dullness, an appearance of uneasiness, indicated by the animal's restlessness, pawing his litter, and appearing as if slightly griped. The pulse is quick, the inner membrane of the eye red, the breathing is sometimes disturbed, and the appetite is diminished. When relief is not afforded, these symptoms increase, the horse becomes violently griped, and the pulse so quick that it is difficult to number the beatings. Costiveness alwa ys prevails in this disorder; and it is difficult sometimes to remove it. The urine is high-coloured, and in small quantity. As the disease proceeds, the pain becomes so violent that the horse appears to be delirious, and it is dangerous to approach him. When this happens he soon dies. Copious bleeding is in this case also an essential remedy, that is, bleeding to the extent of two gallons, unless the animal becomes faint before that quantity has

been taken off. Bleeding alone, however, will not relieve the animal. The bowels must be especially attended to, and unloaded as soon as possible, by giving half a pint of castor oil, or, what will do just as well, common olive oil, every three hours, until an evacuation is obtained. Clysters are of great use in promoting this effect. If after sufficient bleeding the pain should be still violent, some blistering liniment should be well rubbed on the belly.

Blistering Liniment.

Powdered cantharides	1 oz.
Oil of turpentine	2 oz.
Common oil	6 oz.

Mix.

When the bowels are unloaded the animal will gradually recover, but must be fed cautiously for some time. Green food is most proper; and when this cannot be had, bran mashes should be given and a little gruel.

Inflammation of the mucous surface of the bowels is generally brought on by excessive exercise at a time when a horse has been recently taken from grass, or when he has been unaccustomed to exercise, and generally when he is fat.

Inflammation is commonly the consequence of this effort; and when it happens in the bowels, there is a quantity of mucus on the surface of the dung, or mixed with the excrement, which, from its resemblance to fat, has obtained for the disorder the name of molten grease. When it falls on the

mucous membranes of the nose, the throat, the windpipe, and its branches, it assumes the appearance of a violent catarrh, or an epidemic distemper or inflammation of the lungs. Bleeding is the first remedy, and with the same freedom as in the foregoing disorder. It is equally necessary also to open the bowels by the means there directed, that is, clysters and oil, or oil with Epsom salt. When this has been accomplished, the horse should be carefully fed, as directed in inflammation of the lungs, until he is perfectly recovered. This complaint is generally followed by considerable debility, both of the stomach and muscular system in general. Much rest is therefore necessary, or a run at grass; and when he is kept in the stable, his diet must be carefully regulated, and his exercise very moderate.

There is one circumstance to be attended to in all cases of internal inflammation that I have not yet pointed out, which is, that when the redness of the under surface of the eyelids, which is present in all such cases, does not go off, though the animal is bled to faintness, it may be considered as a bad symptom, for it denotes that the nervous system has received a shock that renders the disease incurable. This appearance of the eye should always be attended to; for it is not only an uniform symptom of internal inflammation, but, when removed by bleeding, affords a prognostic of a favourable termination. Strong physic sometimes produces inflammation of the bowels, attended with violent

purging. If this evacuation is checked, or stopped by opium or cordials, the consequence is sure to be fatal. The only thing to be done in this case is to dilute the stimulating matter in the bowels, by giving gruel made of arrow-root, or fine wheat flour. In this way it will be gradually carried off without injury to the bowels.

Flatulent Colic, Gripes, Fret, Botts, Tympanies, or Tympany, and Gullion.*

This is a disorder of considerable importance, and often terminates in inflammation of the bowels, entirely from the circumstance of not being sufficiently understood. The symptoms are well known. The horse is very uneasy, paws his litter, looks round to his flanks, sometimes endeavours to kick his belly, gathers up his hind legs, and falls down rather suddenly, rolls upon his back, suddenly gets up again, and appears in extreme pain. The pulse is in its natural state, and the inner surface of the eyelids is not unusually red. The disorder comes on suddenly, the animal being previously in good health. The horse is sometimes costive, but

* Mr. Coleman considers flatulent colic as a spasmodic affection of some parts of the small intestines, and therefore names it Spasmodic Colic. He thinks it is most commonly produced by drinking cold water, or hard well water. I recollect, that when the Royal Dragoons were quartered at Croydon, we had more horses attacked with flatulent colic than in any other quarter. The water in this barrack was remarkably hard, and contained a great deal of sulphate of lime.

not often, and in some cases the dung is rather loose. Bleeding can scarcely be considered an essential remedy in this complaint, because it is often cured without it. But it is a safe practice, as the distension of the bowels by the confined air may otherwise produce inflammation before relief is afforded. It should never therefore be omitted. The next thing to be done is to give some carminative medicine; and about a pint of brandy or gin and water is as good a carminative as can be given: on all common occasions it may be considered the best, because it is the most innocent as well as effectual. There are cases, however, where the stomach has been so injured by ill treatment, that a more powerful medicine is required. The following tincture should then be given in the dose I shall soon name. Brandy and water, however, that is, from four to six ounces of brandy to twelve ounces of water, should always be preferred, because it is sufficiently strong, in almost all cases, to answer the purpose. For it should be known that the strong medicines usually employed in this disorder, especially oil of turpentine and peppermint, pepper, large doses of ginger and grains of paradise, and opium, though they generally afford relief, are sure to increase the disposition to the disorder by weakening the stomach. The weakest stimulant, therefore, that will afford relief with certainty should be preferred, and its repetition avoided for the future, by avoiding the causes

which produced the disorder, and these will soon be pointed out.

I now come to speak of the circumstance before alluded to, when I observed that the disorder had never been sufficiently understood. In the chapter on the anatomy of the bowels I have given a rough sketch, to show the manner in which the ilium terminates in the cœcum; and have there observed, that the valvular orifice which forms the termination of the ilium is the part by which the confined air is prevented from escaping from the stomach and small intestines. When the stomach is invigorated by brandy and water, the digestive action is restored, and the stomach excited to more vigorous contractions, by which the obstacle is overcome, the confined air discharged, and the animal is relieved. But it sometimes happens, and not unfrequently, that there is an accumulation of excrement in the cœcum, by which the valvular orifice is so completely obstructed, that it cannot be overcome by any efforts of the stomach, though excited by opium and the most powerful carminatives. Clysters in this case will always afford relief, if properly administered; that is, by means of a large ox's bladder and a long pewter pipe, not less than fourteen or fifteen inches in length. The only clyster required is from half a pound to a pound of salt, and five or six quarts of warm water. This will excite the whole of the large bowels to action, and dislodge the fæces from the

cœcum. By this means the animal may always be relieved, and without it he will in such cases certainly die. The bowels cannot be long distended, as they are in flatulent colic, without becoming inflamed, and when inflamed the disorder will always prove fatal. It must now be observed, that when the animal is not relieved in half an hour after the bleeding, and carminative medicine, or brandy and water, and a clyster, have been given, the dose should be repeated, or a stronger carminative given; it may be advisable also to repeat the bleeding, especially if the quantity first taken has not been considerable; for, from the continuance of the distention of the bowels, inflammation is always to be apprehended; and when it once takes place in the bowels from this cause, medicines will avail nothing. There are cases of flatulent colic, however, which are in their nature incurable, that is, first, when there is such a quantity of food taken into the stomach, and the digestive power of the organ has been so depressed by previous disorder, that no effort it can make, however powerfully it may be excited, can enable it to get rid of its contents. Secondly, when the horse is put to work, and into quick exercise in that state: such cases are by no means uncommon in post and coach horses, and rupture of the stomach is sometimes the consequence. When this happens the horse breaks out into a profuse, but very cold, perspiration, is extremely depressed, breathes quickly; the pulse can scarcely be felt, but is very quick. It

is soon followed by death. The distension of the small intestines sometimes forces a portion of them through the mesentery in such a manner, that one coil of it becomes so completely tied that the included air cannot escape.

The prevention of flatulent colic is of much more importance than the cure; and for this reason, that it is always practicable, and therefore ought to be effected. The disorder is generally attributed to drinking cold water, to a chill, to new oats or new hay; and if it cannot be traced to one of these causes, it is considered as an unavoidable evil that must be patiently submitted to, whether the animal die or live. But the most common cause is loading the stomach with food, or giving food at a time when that organ is not fit to receive it; and more especially when the animal is put to work with his stomach in this state. The digestive process is then put a stop to, and air is generated in consequence, which being effectually prevented from escaping upwards by the cardiac valve, and often downwards also by an accumulation of dung in the cœcum, distends the stomach and small intestines, and thus the flatulent colic is produced. It will naturally be asked by a person unacquainted with horses, what inducement there can be to treat this useful animal in such a manner, or feed him so imprudently, as to make him ill, and bring on this painful and formidable disorder. There can be no difficulty, he would say, in giving a horse a

small quantity of oats and hay at a time, or in wetting them with water, and muzzling him when he has had sufficient, that digestion may be completed before he goes to work. The reason is, the sagacious horsekeeper would reply, that he may carry his breakfast and dinner in his belly, and be able to go through his work well without halting, or baiting. They consider the horse's stomach as a mere bag for corn and hay, which, if well filled with corn, that corn is sure to be properly disposed of, and cannot possibly do any harm. It is by this inconsiderate management, and immoderate work, that almost all the diseases of horses are produced.

Anodyne Carminative Tincture.

No. 1.

Turkey opium	1 oz.
Cloves, bruised	2 oz.
Ginger, ditto	3 oz.
Brandy, rum, or gin	1 quart.

No. 2.

Turkey opium, cloves, and ginger, of each............................	1 oz.
The best old brandy, rum, or gin	1 quart.

Let them be digested together in a well-corked bottle, and shaken several times a day for three or four weeks. It is then to be strained through blotting paper, and is fit for use. The medium dose is two ounces, which may be given in a little

mild ale, or an infusion of some aromatic herb, such as peppermint, pennyroyal, chamomile, &c. Mr. Bracey Clarke recommends a tincture made with allspice, bruised, half a pound; brandy, gin, or rum, two quarts. The following mixture has been found effectual.

Camphor	½ oz.
Oil of turpentine	6 oz.
Mix.	

One half of this is a dose, and if the first dose does not afford relief, the second, it is said, has always been found effectual.

I am inclined to believe, that flatulent colic is sometimes brought on by drinking largely of cold pump water, or hard water, in hot weather. (See *Diseases of the Urinary Organs, and Gravelly Complaints.*)

Stomach Staggers, or Sleepy Staggers—Paralysis of the Stomach.

This disorder has been so fully treated of in the third volume, and all the phenomena so minutely explained, that it is only necessary here to give a description of the symptoms and mode of treatment. The disorder is seldom observed until the symptoms are fully established; that is, no symptom is observed until the stomach is loaded, and the animal has ceased to feed. In flatulent colic a great deal of air is extricated from the food contained in the stomach, generally before it is loaded in any considerable degree, and

violent colic pains are produced by it. But in Stomach Staggers there is a peculiar condition of the stomach, by which the animal is induced to continue feeding as long as the stomach is capable of holding food, and fermentation of the food is prevented. What that peculiar condition is, nobody can tell; it does exist, and produces the effect I have described, and that is all that appears to be known of it. It happens at grass as well as in the stable, but generally occurs in low, wet situations, where the grass is coarse and abundant, and most frequently in the fall of the year, or October. There is rarely any symptom of acute pain as in flatulent colic, or of violent delirium as in inflammation of the brain; and what is remarkable, the pulse is seldom altered in any degree whatever, nor is respiration or breathing much affected. But when the disorder has proceeded to some length, both the pulse aud the breathing become affected, and I have known it terminate, in one case, in inflammation of the lungs. Sometimes it inflames the stomach and bowels; but most commonly the fatal termination depends upon the death of the stomach itself, or upon apoplexy, or a rupture of the basilary vein. The symptoms of this disorder are great heaviness and drowsiness, resting the nose in the manger, or inclining the head, and resting the cheek, or bearing against the wall. The head is forced against the manger, or rack, or the nose between the rack staves. In this way the eyes and face are often much bruised

and swollen. The horse stands with his fore leg much under him, appearing to give way every now and then, as if he would fall. There is an appearance of convulsive twitching of the muscles of the neck and chest. There is, too, a great degree of yellowness, approaching to orange-colour, of the membranes of the eyes, and often a yellowness of the mouth also. Urine scarcely any, and high-coloured; sometimes none is voided, and sometimes it is discharged by a convulsive effort. Sometimes the disorder is attended with locked jaw, ending in paralysis and death. In the early stage of the disorder the horse is sometimes suddenly roused by opening the stable door, he lifts up his head, and sometimes neighs; but this is only a momentary effort. When the disease happens at grass, the animal is generally found forcing his head against the hedge, or a gate, or moving about in a state of stupor and apparent insensibility. Sometimes he is found struggling in a ditch, and in that situation he often dies. In the low country, in the neighbourhood of Glastonbury and Wedmoor, the disorder was very prevalent before the enclosures were made, and the land drained. It generally, or always, ended fatally; but the horses lived sometimes a month or two under the symptoms of the disorder, but in a less degree. It is probable the disease was thus slow in its progress, from the stomach not being so loaded as in the cases which commonly occur. They generally, at length, fell into a ditch, and died. The disorder was attri-

buted by the proprietors of the country to the plant named ragwort, which cattle were observed to eat freely, and were said to die in consequence, in a similar manner to horses. The truth, however, appears to be, that the disorder was brought on by the coldness of the situation, and the poor keep, or very bad hay that is generally given to horses and cattle in that country; for it was observed, that sheep ate greedily of ragwort, and never suffered from it; but they would eat the plant during the first year only of its growth, when it is tender and succulent, while cattle and horses were observed to eat it in the second year of its growth, when the stalks become large, and of course difficult of digestion. If horses had but little else to eat, and were thus compelled to eat such indigestible food, the disease might have been so produced; but the hay in that country is generally bad, and the country low, open, cold, and damp, and the horses and cattle of course unhealthy.

Since the land has been drained the grass and hay have been improved, and the staggers seldom occur. Some time since I received a letter from a gentleman of Swansea, in which he says, that a disease has many times occurred among the horses that work in the mines, resembling stomach-staggers, but in a more violent form. It has been so destructive at times, that one proprietor lost more than a hundred horses by it. It uniformly proved

fatal, and though it was carefully investigated, no satisfactory account could be given of it.*

After considering carefully all the circumstances connected with this disorder, I still feel at a loss to account for it. As the stomach was in almost every instance found loaded with dry undigested food, I have considered that as the immediate cause of the disease; but the difficulty lies in accounting for the appetite which leads the animal

* After carefully considering the account that was sent me of this disorder, and comparing it with some cases that have lately occurred in my own practice, I am inclined to believe, that copious bleeding from the temporal arteries would have been found useful. I was desired to see a horse that was labouring under this disease in a very severe degree. The veterinary surgeon who attended him, had employed the usual remedies, and bled him copiously from the neck; indeed he had bled him several times, and had carried it as far as he thought he could prudently do. On seeing the horse, I felt satisfied that the only chance of saving him was to open both temporal arteries; but though he was in a stupid sleepy state, resting his head in the manger, and appearing almost insensible, yet upon going up in the stall to him, he appeared disposed to be violent, or likely to fall. He was therefore led out of the stable, but with some difficulty, and was held by two men, one on each side with a long halter. He soon began to be violent, and after a short time fell down, when the hobbles were put upon him, and he was bled in both temporal arteries, and one artery of the tail. After bleeding a considerable time, he began to tremble and appear faint. The hobbles were then taken off, and he got up without difficulty. He appeared perfectly relieved from the disease and walked quietly into the stable, where a large well littered place had been prepared for him. He soon began to feed, and after some days was turned to grass, and perfectly recovered from the disorder.

to cram his stomach in such a manner. In one case that occured near Exeter, I had an opportunity of weighing the stomach with its contents, and it amounted to rather more than 64 lbs. The disorder which appeared at Swansea was generally supposed to be contagious; and from so many horses being seized with it about the same time, it seems rather probable, that it was either contagious, or caused, like other epidemic diseases, by some peculiar state of the air with which we are unacquainted.

As soon as stomach staggers are observed, the horse should be bled in order to relieve the head in some degree; but the principal object is to enable the stomach to get rid of the load which oppresses it. Various remedies have been proposed for this purpose. The best I believe are purgatives joined with cordials and stimulants, and small quantities of warm water frequently, in order to soften the contents of the stomach. Clysters of salt and water are useful also, and should be thrown up several times a day. The disease is often incurable, probably from a want of early attention.

Gibson relates a case of stomach staggers which occurred at grass.—" On opening the body," he says, " I was greatly surprised to find his stomach and all his guts, both large and small, filled and crammed to such a degree that it would have been impossible, by any means in the world, to have procured the least vent; for all the aliment that

was in the stomach, and the dung in the bowels, from one end to the other, was entirely dry and without moisture, and, before they were opened, appeared as hard and as full crammed as a Bologna sausage, without the least softness or yielding in any part. The matter contained in them was no less extraordinary, the stomach being filled with acorns, sloes, oak-leaves, and such other things as he could pick up about the hedges; some green and some withered. The contents of the guts were chiefly leaves, neither well chewed nor digested, with a mixture of grass. But there was little or no grass in his stomach, but chiefly acorn cups and leaves. This horse had been turned into a very rank aftermarsh, and had probably acquired a depraved appetite, which led him to eat the indigestible and astringent food."

I once found a horse's œsophagus crammed in the manner described by Gibson, but was prevented from examining the stomach and bowels, and upon enquiring about them could get no satisfactory information. This case I then thought depended upon some obstruction in the lower part of the œsophagus.

When medicines cannot be readily procured, two or three table-spoonfuls of flour of mustard and three or four ounces of common salt may be tried. On whatever cause stomach staggers may depend, I think it a useful precaution, as soon as the disease has made its appearance, to remove other horses from the situation; and if there is the

slightest ground for supposing that the manner of feeding the horses has contributed to it, that likewise should be changed. I would advise, also, a dose of warm or stomachic physic being given to the other horses to improve the state or condition of the digestive system. Some relief may be afforded in stomach staggers by placing a cask with a little straw upon it for the horse to rest his head upon.

Drench for the Staggers.

No. 1.

Barbadoes aloes	6 dr. to 1 oz.
Calomel	2 dr.
Oil of Peppermint	20 drops.
Warm water	1 pint.
Tincture of cardamoms	2 oz.

Mix for one dose.

No. 2.

Common salt	4 oz.
Ginger	2 dr. or 2 tea-spoonfuls.
Carbonate of soda	1 oz.
Water	1 quart.

Mix for one dose.

About a quart of water may be given every now and then with a horn; and if a tea-spoonful or two of compound spirit of ammonia (sal volatile) be added to it, the effect will be promoted. A table-spoonful or two of common salt may also be added three or four times a day. The horse

should be drenched and clystered during the night as well as the day; in short, without unremitting attention success must not be expected.

Worms.

Worms are most commonly found in the bowels and stomach; but they are sometimes met with also in almost every part of the body. I have found them in the windpipe, in the mesenteric artery, in an abscess, in the substance of the abdominal muscles; and, according to Lafosse, they have been found also in the pancreatic and salivary ducts. The worms commonly found in the stomach are named botts. They are generally attached to the cuticular or insensible coat of the stomach; but sometimes clusters of them are found at the pylorus, and even in the beginning of the first intestine, named duodenum. In one case they were so numerous in this last situation as to obstruct the passage completely, and cause the animal's death. Botts are short thick reddish worms, surrounded with short prickles, which are arranged in circular bands all over the body. They attach themselves firmly by two hooks, which they appear to have the power of straightening and retracting, of projecting and curvating. They are extremely tenacious of life, and difficult to be expelled from the stomach, except about the month of September, or when a horse is first taken up from grass. At this period

they may generally be got rid of by brine, or a solution of common salt in water, in a dose of from 4 to 5 ounces of salt to a quart of water. The horse should be kept fasting the night before it is given; and about five minutes before the drench with salt is given, let the horse be drenched with about a pint of warm milk, sweetened with honey or treacle.

It has been supposed that botts are not only innocent, but even beneficial, from their being so frequently found in the horse's stomach after death, when during the animal's life no inconvenience was observed to arise from them. That they are sometimes injurious however, and fatally so, has been clearly demonstrated by several cases that have come under my observation. They have been known to ulcerate and make holes in the stomach. At times, they have caused the most serious diseases of the brain and nervous system; and in several instances, a fatal inflammation of the heart and lungs. Gibson, a most respectable veterinary author, considers them as sometimes the cause of locked jaw; and Mr. James Clarke, of Edinburgh, has recorded one case in which they had made an opening through the horse's stomach into the abdomen. From the connexion or consent that exists between the stomach and the lungs, it is not unlikely that they are sometimes the cause of troublesome coughs, either immediately or remotely, by causing a vo-

racious and foul appetite, which leads the horse to eat too much hay, or even his litter.

The injury which botts do the stomach may not always cease when they detach themselves, as they appear to do in the spring of the year, in order to pass off through the bowels and become flies; for they are the larvæ of a fly which deposits its eggs on the various grasses on which horses feed. Here they remain after the grass has been made into hay, and are then taken into the stomach. Great numbers are no doubt destroyed by mastication, but a sufficient number escape to produce botts in the stomach, sometimes in large clusters. The fly deposits its eggs also on the horse's coat, and it has been thought that they are conveyed from the coat to the stomach by the horse licking himself: this may be one way in which they get into the stomach; but when they have been so often found in the stomachs of horses that are never kept at grass, I cannot suppose it is the only one.

Mr. Feron says, "Botts, when they are numerous, are very destructive to horses. They will deprive the animal of his nutriment, prevent digestion, and do great damage to the stomach, inasmuch as to produce death. I have seen several horses," he says, "the stomachs of which were pierced through, the botts making their way into the abdomen. Some of these animals insert themselves between the coats of the stomach,

where they are almost hid. But," he continues, "a small number of botts may be of some use, and that is in assisting the cuticular coat to break down the food."

Mr. Feron is of opinion that the kind of fly from which botts are produced, deposit their eggs upon the grass, and that when this is eaten even in the state of hay, the botts will be hatched in the stomach; and, he adds, "will remain there during the animal's life." He observes also, "that horses have been known in cavalry regiments, that have been eight or ten years without any grass at all, and yet have been very much troubled with botts."

When a horse is labouring under a disease which there is reason to suspect is occasioned by botts, the only medicine likely to do any good is oil. When I was in the Royal Dragoons we lost several young horses at Southampton, apparently from inflammation of the lungs; but, on examining them after death, it was evident from the injury done to the stomach, that botts were the cause of the disorder. The only medicine that appeared to do good on the occasion was castor oil.

Mr. Feron observes, that "common oil, given in large quantities, has sometimes succeeded in detaching botts from the stomach; and, indeed, it is the only remedy that seems to have any effect in making them lose their hold from the stomach

on account of its having, as may reasonably be supposed, a poisonous quality to that insect."

The difficulty, however, is in distinguishing when botts are doing mischief. In the above cases the symptoms did not give way to copious bleeding, though carried so far as to produce great debility. In one case that occurred at Exeter, a horse was affected with staggers, which appeared to be subdued by copious bleeding and physic; but the disease returned after a short time and ended fatally. On opening the horse the stomach was found to have been penetrated quite through by botts.

The next kind of worm to be described is that named teres lumbricus, or round worm. It is found in the small intestines, and sometimes, though seldom, in the stomach. In the last case in which I found these worms in the stomach, the horse had been very subject to flatulent colic, or gripes, of which at last he died. He generally had an attack of this disorder two or three times a week. I once saw this horse labouring under an attack of gripes. He had taken a dose of the anodyne carminative tincture without being relieved. I prescribed four ounces of oil of turpentine, which cured him in a short time. I had no suspicion of the horse being troubled with worms: had that circumstance been known, and another dose of turpentine given, after keeping the horse chiefly on bran mashes for one day, and

fasting him one night, it is probable, I think, that all of them would have been swept off. These worms are white, and from six to ten inches in length.

There is another kind of worm found in the small intestines, and sometimes in the large intestines also, which have seldom been noticed by veterinary writers. These worms are flat, about the eighth of an inch in width, and from one to three inches in length. They have transverse ribs or lines, something like the leech-worm, and adhere to the bowels by one of their extremities.

A fourth kind of worm is found both in the small and large intestines: they are round, like the teres, but slender, and about one or two inches in length. They have been named, from their form, the Whip-worm.

The fifth and last kind of worms are named ascarides. They are found in the large intestines; are very slender, or like needles, and about one inch in length. Worms similar to these have been found in the mesenteric artery and in the windpipe; from which circumstance it seems probable that they are deposited from the blood. In these situations, indeed, there is no other source from which they can be derived, and those on the mucous surface of the bowels may sometimes have the same origin. This being the case, we are no longer at a loss to account for the efficacy of Æthiops' mineral and antimony given as alteratives, especially the former, and other mild prepa-

rations of mercury. By giving such medicines for some time, we impregnate the blood with them, and, consequently, all the secretions of the body. Whenever these medicines are employed, they should be followed by a dose of physic, which will carry off the sickly and dead worms, with the mucous which serves as a nidus for them, and so improve the digestive functions, that, if the horse is carefully fed afterwards, it is probable no more worms will be engendered.

The treatment most commonly adopted for the removal of worms is to give one or two drams of calomel, with a dose of physic, or the calomel at night, and a dose of physic in the morning. Others prefer giving a dram of calomel for three successive nights previous to the physic. Oil of turpentine has, within a few years, been much used as a remedy for worms, and appears to be the most powerful vermifuge we are acquainted with. I have known it, however, in one instance cause the death of the horse, by bringing on inflammation of the stomach. This horse, however, had taken a dose of physic the day before, which was operating at the time the oil of turpentine was given. In two other horses oil of turpentine caused alarming symptoms; but they soon got well again. Mr. B. Clarke gave four ounces of oil of turpentine to a horse that was intended for the dogs, and which appeared to have worms. He says it caused considerable uneasiness, the horse appearing as if he were griped. The next morn-

ing only two or three worms were voided, and as no other effect was observed at the end of forty-eight hours he was destroyed. Living worms, he says, were found both in the large and small intestines, and the mucous surface of the stomach was found inflamed, and in some parts blistered: an appearance he never before met with. These are the only cases that have come within my knowledge in which oil of turpentine has done mischief; but on the other hand, I have seen, and have been informed, of a great number of cases, in which it has proved an efficacious remedy for worms. It has been frequently given in a dose of 4 oz. as a remedy for the flatulent colic, or gripes, and I have known it given even in a dose of 8 oz. without doing any injury. Its efficacy, as a vermifuge, was first communicated to me by a medical gentleman of Bridport, who had given it himself, and had known it employed by some farriers in his neighbourhood with the most striking effect. His method was to give the horse the day before about 3 drams of aloes, in order to relax the bowels a little. He was kept fasting during the night, and early in the morning took 4 oz. of oil of turpentine in a pint of gruel. He was kept fasting for two or three hours afterwards, and then fed sparingly with bran mashes and warm water during the day. This previous fasting appears to me necessary to the success of the medicines; for, in this case, it seems probable that some part of the turpentine is absorbed from the empty stomach

and bowels, so that the worms are attacked both in the bowels, and through the medium of the blood. The celebrated remedy of M. Chabert for worms is said to consist principally of empyreumatic animal oil. A mixture of olive oil, tar, and oil of turpentine, has been found an effectual remedy for the rot in sheep, a disease occasioned by worms in the liver, named *flukes.*

From the experiments of Professors Tiedemann and Gmelin, lately published, it appears probable that this mixture, which is to be given after a night's fasting, is absorbed from the empty stomach and bowels, and conveyed immediately to the ducts of the liver, where it quickly destroys the flukes. It is not unlikely, I think, that a similar mixture would be found a good vermifuge in horses. The principal object, however, in this, as in all other diseases, should be prevention, which may almost always be accomplished by judicious feeding, provided the animal is worked fairly, and kept in a wholesome stable.

When the weather and season of the year are favourable, the cheapest and most innocent of all vermifuges is a run at grass. Dr. Knox is of opinion that no worm could remain in the intestines if the system were kept under the influence of oil of turpentine for a few days; and it is not improbable that small but repeated doses of oil of turpentine, tar, and oil, may be found a good vermifuge in horses.

CHAPTER XV.

CHRONIC DISEASES OF THE LUNGS AND ORGANS OF RESPIRATION.

Chronic Cough.

HERE again we trace the bad effects of giving immoderate quantities of hay, and especially of bad hay. This disorder is frequently occasioned by it. It may appear strange to a person unacquainted with the animal economy, that what is taken into the stomach should affect the mucous membrane of the lungs, and that of the larynx, which is the seat of chronic cough. It is in the following manner. When the stomach is distended with hay, and especially if that hay is bad, it is gradually weakened, and rendered incapable of performing its office properly. Hence the chyle is crude and unfit for the purpose it was intended for, that is, forming pure blood. By this imprudent method of feeding them, the blood is rendered impure, and of course all the secretions become so likewise. Thus it is that the bland mucous fluid, formed upon the internal membrane of the windpipe and its branches, for the purpose of defending and lubricating it, becomes saline and acrimo nious, and a source of constant irritation: hence arises the cough. It is commonly observed, that horses with chronic cough have immoderate appe-

tites both for hay and water; and though people have suspected some connexion between this circumstance and the cough, they have not perceived the entire dependence of the cough upon it, which they might easily have done, by a very simple experiment. Let a horse affected with chronic cough be fed moderately upon green food only, or in the manner I have directed in the chapter on feeding, and it will generally be found that the chronic cough will gradually go off. But let the horse return to his former method of feeding, and the disease will quickly re-appear.

People generally, however, prefer to this simple remedy, the trouble, the expence, and uncertain effects of medicine. Yet the medicines given in this disorder sometimes do good, for they are generally of the diuretic kind, and by increasing the action of those common emunctories, the kidneys, carry off the acrimonious mucus, which would otherwise be deposited on the mucous membrane of the lungs; but as soon as the medicine is discontinued the cough returns, because the source of the disorder is still continued.

It often happens that the proprietor of the horse is aware of the injurious effect of giving much hay, and allows only what he calls a moderate quantity, or feeds him freely with corn, and thereby diminishes his appetite for hay; at the same time he is careful in his choice of the latter. Thus he keeps the disorder in check, or prevents it from making any progress, and a cough may go on for two or

three years in this way, without hindering the horse much in his work. More commonly, however, the horse is allowed to feed as he likes on hay, and generally only a small quantity of corn is allowed.

He thus continues to load his stomach and bowels until that selective and delicate appetite which he possesses when the stomach is healthy, is entirely lost, and he eats greedily of any hay that is put before him, and will drink the filthiest water. The disease then proceeds rapidly, and soon terminates in roaring, or broken wind, or in both those disorders.

There is no occasion to say much on the treatment and prevention of this disorder when arising from improper feeding. It has indeed already been noticed. It may be useful, however, to observe that when the appetite has been depraved, and the digestive power weakened by long continued improper feeding, they cannot be suddenly restored. And it will often require a steady perseverance in a careful system of feeding, and the use of diuretic medicine, in such a way, however, as to keep up only a moderate degree of increased action in the kidneys without injuring those organs, or affecting the stomach. And this may be accomplished by giving half an ounce of nitre in a little corn twice or three times a day, or the powder described at page 99. If a horse is inclined to eat his litter he should be muzzled during

the night, and in the day time it should be taken from him.

Chronic cough is sometimes a consequence of a violent attack of catarrh or strangles, especially when there has been considerable soreness and inflammation of the throat, extending, in some degree, perhaps, to the larynx. Roaring often originates in the same cause. In such cases the membrane lining the larynx, or upper part of the windpipe, is left in a morbidly irritable state, so that coughing is excited by the slightest causes, such as the dust of the hay, cold moist air, or even by its own mucous secretion, and by giving too much food or water at one time. I am inclined to think that the cough may sometimes depend on a defective secretion, or dryness of the membrane lining the larynx, especially at that exquisitely sensible part, the rima or chink. It has been thought that this peculiar sensibility exists also in the membrane lining the windpipe; but this is far from being the case. I have several times made an opening in the windpipe of a living horse, and introduced my finger through the opening. I have scratched the membrane, or internal surface of the windpipe with my nail, and with a knife, and the animal did not appear to suffer any pain from it. But on passing up a bit of straw, the moment it touched the larynx, the most dreadful irritation was produced by it, and a kind of convulsive effort of the muscles of respiration. I have known an

obstinate chronic cough cured by drenches composed of oxymel, or a syrup made with treacle and vinegar; also by a decoction of garlic with linseed oil. Barbadoes tar and oil, with balsam of sulphur, have also been employed as remedies for cough. It is not improbable that these drenches, by stimulating the throat, may improve the secretion of the mucous membrane of the larynx, or render it less irritable.

Blistering the throat externally may also be of use. In the human subject, gargles, made of infusion of Cayenne pepper, have been employed in hoarseness, and a syrup made from a decoction of horse-radish, with a view, probably, of improving the mucous secretion of the larynx. Opium will frequently put a stop to chronic cough for a day or two; but its effect, I believe, is never permanent. This seems to prove, however, that the cough depends, in some measure, on a morbid sensibility of the larynx.

From the view I have now taken of this subject, it will appear that chronic cough may depend either upon a local or constitutional cause. In the latter case the whole of the mucous surface of the lungs seems to be affected in consequence of a morbid condition of the digestive organs, produced and kept up by improper feeding; in the latter it depends upon a morbid sensibility of the membrane lining the larynx, generally caused by catching severe colds, sore throats, or by strangles. In this irritable state of the larynx, those causes

which excite or aggravate the cough should be carefully avoided, such as dusty hay, smoke, the air of a close filthy stable, sudden exposure to cold when heated, or exposure to a current of air in the stable. To these we may add loading the stomach with hay and water, for there is a striking sympathy or consent between the stomach and the larynx, so much so that, by suffering the horse to fill himself either with food or cold water, wheezing and coughing are often produced.

Cough Ball.

No. 1.

Gum ammoniac	2 or 3 drs.
Powdered squills	1 dr.
Camphor	1 dr.
Ginger	1 dr.
Castile soap	2 drs.
Oil of anise-seed	20 drops.

Syrup and flour enough to form the ball.

No. 2.

Strained turpentine	8 oz.
Yellow resin	4 oz.
Olive oil	2 oz.
Hard soap	8 oz.

Put these in a pan over a slow fire, and, when perfectly melted, stir in of powdered ginger 6 oz.; allspice powdered 6 oz.; liquorice powder, or linseed powder, enough to form a mass fit for making balls. The dose, from 1½ oz. to 2 oz., to be given

for two or three successive mornings, or until it acts as a diuretic. This is a cheap and efficacious composition, and will retain a proper consistence, as well as the virtues of the ingredients, for a considerable time, especially if kept in a pot tied over with bladder. It is a good palliative for asthmatic affections, or broken wind. When a horse, affected with cough, becomes costive, a clyster may be thrown up; or he may be kept chiefly on green food, or bran mashes, for a few days. I have observed, in some cases, that the cough-ball has been more efficacious when preceded by a mild purgative with a dram of calomel. The following powder has sometimes been found a good remedy for coughs, especially when the horse's diet and exercise have been carefully attended to; and in cases where the cough has appeared to be confined to the larynx, the following drench has done good.

The Powder.

Take of nitre, levigated antimony, and powdered resin, of each 2 or 3 drams; mix for one dose, and give it every morning in a mash until it acts as a diuretic. When cough happens to young horses, and the membranes of the eye appear red, the loss of a little blood and a clyster are likely to do good.

Drench for Cough.

Bruise 3 oz. of fresh squills in a mortar, or 4 or 5 oz. of garlic; and macerate in 12 oz. of vinegar in a slow oven, or on a hot plate, for an hour; strain

off the liquid part, and add to it treacle or honey 1 lb. The dose should be 3 or 4 oz. in bad coughs; where there appears great irritation in the larynx, two tea-spoonsful, or one table-spoonful of tincture of opium may be added to two or three doses. A dose may be given every morning.

Roaring.

This disorder depends upon a permanent thickening, or some other morbid state of the laryngeal membrane at the rima, or chink of the glottis. This thickening of the membrane, while it causes the air to make a hissing or wheezing kind of noise in passing through the chink, deadens, in a considerable degree, the sensibility of the laryngeal nerves; and, therefore, roaring is frequently unattended with cough. Roaring then is only another degree of the same complaint as the foregoing, and is absolutely incurable. Roaring, however, does not prevent a horse from working moderately; and his diet should be carefully attended to, or he may become broken-winded, or so bad as to be unserviceable. I found two cases of very bad roaring occasioned by ulceration within the larynx; in one of them the ulcer was very small, and close to the chink. One of these horses had been effected for some time with the mild or chronic glanders, and belonged to Mr. Russel's glandered team. He was in good condi-

tion, and breathed freely until put into motion. It rendered him, however, so useless that he was destroyed. The other horse was attacked in the stable with violent coughing, and soon after with roaring,-probably from an oat, or some of his food getting into the larynx. He was turned to grass, and soon became so distressed, his breathing being heard at a considerable distance, that it was thought right to destroy him. The only morbid appearance found upon a careful examination, was a small ulcer on one side of the chink of the glottis. I once saved a horse's life that appeared to have an oat, or some of his food, in the larynx, by the operation named bronchotomy. I found the horse in the most distressing situation. He was scarcely able to breathe, and his breathing was so loud as to be heard at a distance of many yards; and there was a discharge of bloody mucus from the nostril. Attempts had been made to wash down what appeared to be sticking in his throat, and to force it down with a probang. I made an opening in the front of the windpipe about 6 inches below the throat, and then thrust a probang upwards through the larynx, and immediately withdrew it again. The horse was relieved, and got quite well. He worked as a post-horse for several years after, and was named by the post boys *Cut-throat*.

Broken Wind.

That peculiar kind of breathing by which broken wind is distinguished has been differently explained. It has been thought that some of the air-cells were ruptured, and that the lungs became emphysematous in consequence. If we inflate the lungs of a small animal, a rabbit for example, it seems as if the air were confined only by the pleura, the lungs appearing almost like an inflated bladder, which has led me to think that the extremities of the bronchiæ, or air-vessels, were covered or closed by the pleura only, instead of terminating in cells. Whether they do so or not is a matter of little importance in practice: nor is it more useful to inquire whether the peculiar kind of breathing, which distinguishes broken wind (the abdominal muscles descending with a jerk, and in double time, *en deux temps*, as the French express it), depends upon an extravasation of air into the thorax, or into the cellular tissue of the lungs, or upon a morbid and viscid secretion in the mucous membrane of the bronchiæ or branches of the windpipe. Certain it is that, though we cannot cure the disease radically, we sometimes can temporarily; and we can always mitigate it, and render a horse useful, in some degree, by careful attention to feeding and exercise, and by keeping him in a proper situation. Broken wind is aggravated by exposing a horse to cold and rain as well as by improper feeding; and we often find

the animal relieved, in some degree, by a discharge taking place from the nostrils, which probably proceeds from the lungs. These circumstances seem to favour the opinion of its being an asthmatic affection, and dependant upon a morbid state of the mucous membrane of the lungs, and debility of the muscles of respiration, especially the diaphragm, rather than upon a rupture of the air vessels of the lungs. We often find, however, upon examining the lungs of a broken-winded horse after death, that they are considerably larger and lighter than healthy lungs, and the pleura is often raised into bladders on the surface. Mr. Leigh, veterinary surgeon, of Bristol, lately examined the lungs of a broken-winded horse, where almost the whole of the pleura was raised from the surface like an inflated bladder, and the lungs were considerably enlarged. Here it is probable the air vessels or cells had been ruptured by coughing, while many of the vessels were plugged up wholly or partially with viscid mucus. I once kept a horse that was badly broken-winded for several weeks in a field where there was but little grass and no water. He was then shot, and the lungs were found perfectly healthy, and of the natural size. I once too purchased a handsome poney that was as badly broken-winded as a horse could be. By means of a little medicine, and constant attention to feeding, he soon got quite well, and I found him as useful a horse as I ever had. I kept him between one and two years, when he died. It is necessary, however, to notice the peculiar cough by which broken wind

may be known, even when the breathing has been rendered tranquil and easy by keeping the horse's stomach nearly or quite empty for some time before he is offered for sale. On squeezing the upper part of the windpipe the horse readily coughs, and, from the great weakness of the diaphragm, the cough is what is called short and hollow; but, perhaps, will be better known by describing it as a cough like that of a person who has an asthma. In chronic cough the air is expelled with considerable force, and the cough is strong and loud; but in broken wind it is thrown out feebly, and with a kind of jerk of the diaphragm and other muscles of respiration. In broken wind there is always more or less of general debility, but especially in the stomach and bowels; and broken-winded horses are very subject to flatulent colic. The only good that can be done in this disorder is to render the horse capable of moderate work, especially slow work on the road as a saddle horse: but I have known them, under good management, made capable of doing a great deal more. The most easy and effectual method of accomplishing this is to keep the horse, in temperate weather, in a paddock, or field, where there is little for him to eat, and no water. A place inclosed with a wall is the best, as he will sometimes eat too much from the hedges. If kept in a stable, his diet must constantly be attended to; a mash of sweet fresh bran and ground oats is the best food; and, if this is carefully dispensed, and in a proper proportion, very little hay will be sufficient. His al-

lowance for twenty-four hours should not exceed four or five pounds, but it should be of the best quality. It should be always wetted with water. A very small quantity of good green food now and then would be of great use; and the following ball may be given now and then to invigorate the stomach a little, and keep up an increased action in the kidneys. Broken-winded horses have been apparently cured for a time by keeping them upon green food, or upon a very spare but nourishing diet, consisting of food very easy of digestion. Diuretic medicines afford great relief, especially when joined with tonics or cordials. The disease, however, may be considered incurable. When the horse is costive, clysters and a laxative are useful. The daily allowance of food for a broken-winded horse should be half a peck of ground oats, and one or two pecks of good bran, made into a mash, and divided into four feeds: three or four pounds of hay with this allowance will be quite sufficient.

Cordial Diuretic Ball.

Common turpentine and hard soap, of each .... 3 drs.
Powdered ginger .... 1 dr.
Powdered allspice .... 1 to 2 drs.
Liquorice powder or linseed powder enough to form the ball.

CHAPTER XVI.

DISORDERS OF THE LIVER, JAUNDICE, OR YELLOWS.

THIS organ is not so often diseased in the horse as in the human body. I have, however, in examining horses after death, seen it diseased, in a considerable degree; but these diseases appeared to have been incurable. From the comparative simplicity of its structure it is seldom, I believe, affected with jaundice, or obstruction in the gall duct. The liver itself however is sometimes found condensed, thickened, or hardened, but more frequently distended, tender, and easily broken. So tender, or rotten, as it is commonly termed, does it sometimes become, that it bursts, or is ruptured, and the horse dies by an effusion of blood into the cavity of the abdomen. A peculiar yellowness of the membranes of the eyes and mouth sometimes attends certain disorders, which have on that account been named yellows, or jaundice. These disorders consist in great heaviness of the head, a peculiar languor and disinclination to motion, yellowness, or a yellowish redness of the inner surface of the eyelids, while little or no dung is voided, and that little has mucus or slime on its surface; the urine is scanty, and high-coloured; in short there is great torpor in all the organs of the body. This

disorder generally happens towards autumn, or the latter part of summer, and may be caused, in some measure, by the heat of the weather, as well as by feeding immoderately, especially upon hay, when it happens to be remarkably good and sweet, such hay always tempting a horse to eat immoderately; but it is produced by immoderate feeding upon any kind of hay, or even of corn. By this excess of food, assisted by the heat of the weather, the stomach is weakened, and the bowels become torpid; the large bowels are in consequence loaded with excrement, and the mesenteric veins with blood. Hence the liver also becomes loaded with blood, and performs its office imperfectly; the bile therefore seems to be forced back upon the circulation, or re-absorbed, and thus the blood and all the secretions are tinged of a yellow colour. The high colour of the membrane of the eye is caused by the great determination of blood to the head, when the blood is forced into vessels which in health convey only a colourless and transparent fluid; and as the whole mass of blood is loaded with bile, it appears in those minute vessels of a yellow colour: and generally that yellowness in the membranes under the eyelids approaches towards redness, or the colour of an orange. Bleeding is the first remedy in this disorder; nor should blood be taken off in small quantities at a time, from a fear of increasing the animal's apparent weakness, which depends more upon the brain being oppressed with blood than any thing else,

but in a full quantity, that is, to the extent of from one to two gallons, or until the horse becomes faint. The bowels should then be unloaded by means of clysters and a purgative ball. When clysters are properly administered they will promote and hasten the operation of the purgative. Not, however, if syringes are employed for the purpose, for I never saw any apparatus of this sort but what was worse than useless. A good ox's bladder, capable of holding from six quarts to two gallons, and a pewter pipe fifteen inches long, and an inch in bore, is the most useful apparatus that can be employed. The quantity of fluid to be injected or thrown up should not be less than from four to six quarts; the proportion of common salt should be two or three ounces to a quart of water. This, with an abstemious diet, and only voluntary exercise, will render all other medicine unnecessary.

CHAPTER XVII.

DISEASES OF THE URINARY ORGANS.—INFLAMMATION OF THE KIDNEYS AND BLADDER.—STRANGURY.—RETENTION OR STOPPAGE OF URINE.—SUPPRESSION OF URINE.—STONE AND GRAVEL.—INCONTINENCE OF URINE.—PALSY OF THE BLADDER.—DIABETES, AND HÆMATURIA, OR BLOODY URINE.

INFLAMMATION of the kidneys is generally caused by riding or driving a horse immoderately, by

straining the loins, in making him draw heavy loads or carry heavy burthens; or they may become inflamed in consequence of peritonæal inflammation of the bowels. In either case bleed freely, or to faintness; cover the loins with a fresh sheep skin, the flesh side under, having first rubbed on them some warm embrocation, such as hartshorn and oil, with a little oil of turpentine, or the following embrocation. Open the bowels with a dose of castor oil and clysters of warm water, with a small quantity of salt and oil, or hog's-lard. I should first have noticed, however, the Symptoms of the disorder, which are, a constant desire to make water, without being able to void any, or scarcely any; and the little that is discharged is dark-coloured or bloody. There is great stiffness of the hind parts, generally more observable in one leg than the other. The horse often stands straddling or wide, as if in want to make water, and every now and then straining, or making painful and ineffectual efforts to stale. This appearance often leads the groom to think that it is a stoppage of water, and that a diuretic is necessary; but the fact is, that the dark-coloured or bloody urine is so stimulating or acrimonious that the bladder contracts violently in order to force out the smallest quantity that gets into it. I have examined horses that have died of this disorder, and found the bladder healthy, while the kidneys have been highly inflamed. The disorder I have now been describing may happen in various degrees, but still

the treatment is the same. It sometimes happens, however, that the urine becomes foul and stimulating from high feeding, or foul or unwholesome feeding. In this case the bladder will contract upon a small quantity of urine, and the urine may be rather high-coloured, like beer, or turbid, like whey, and the horse may appear to strain a little in voiding it; but this is very different from those distressing symptoms which attend inflammation of the kidneys, nor is it accompanied with loss of appetite, or any degree of fever, which is always present in inflammation of the kidneys. When the urine becomes thus stimulating, some cold mashes, with a little nitre, may be given, or what is still better, perhaps, some grass, vetches, or lucern. If the horse is at all costive, a clyster should be thrown up. An infusion of linseed is a good drink for a horse when the urine is in this state. There are other diseases of the kidneys by which their functions are interrupted, at first partially, and with considerable intermissions or remissions, but after a time wholly and permanently. One of these diseases is a gradual decay of the kidney; another is a gradual enlargement and obliteration of its structure as a secreting organ; and a third is a collection of earthy matter or gravel. I have seen a stone that was found in a horse's kidney which weighed five ounces. Gibson relates a case of decayed kidneys in a miller's horse, caused, as he thought, by carrying heavy burthens. "This horse," he says, "was often subject to suppression

of urine, and though he was always relieved by timely applications, yet these attacks became more frequent as he grew old, till the last attack, when he continued three days without staling, or showing the least disposition to stale. During this time he never stood wide or straddling, as in inflammation of the kidneys, but moved his hind legs with ease till the day before his death, when his legs and whole body swelled, and broke out into great blotches. On opening the body after death the left kidney was found very large, in some places spongy, in others scirrhous, and so mangled that nothing of its original structure remained. Nothing remained of the right kidney but a small hard substance, about the size of a pullet's egg, almost ossified, and of no regular shape." In examining glandered horses that have taken sublimate or calomel for some time, I have generally found one or both kidneys considerably enlarged; but instead of looking red and inflamed, they were generally pale, flabby, and tender. All the preparations of mercury, when continued for some time, act powerfully as diuretics; from which it may be inferred that an improper use of any diuretic medicine is likely to injure the kidneys. Calculous concretions, or gravel, are sometimes found in the kidneys both of horses and cattle, and may become a cause of *suppression* of urine, but I have never found a stone in a horse's bladder. I have known one case, however, of a *stoppage* of water produced by a stone plugging up the urethra, or

urinary passage, but it was at last forced by the urine so near to the extremity of the penis that it was discovered and got out. A distinction is to be observed between the terms *suppression* of urine, and *retention* or *stoppage* of urine. The former means a defective secretion or formation of urine, as in Gibson's case; the latter implies a stoppage in some of the passages, either by the sphincter, or neck of the bladder, being so closed, in consequence of inflammation, that the contractions of the bladder and abdominal muscles are not powerful enough to force it open, or by a stone plugging up the *ureter*, or passage from the kidney to the bladder, or the *urethra*, or passage from the bladder through the penis, or yard. Mr. James Clark observes, "Although there are no cases upon record of a stone being found in a horse's bladder equal in size to those found in the human bladder, yet I have had undoubted proofs of it from repeated dissections; and from a variety of symptoms that may be observed about horses, and from the frequent attacks they are liable to of stoppage of urine, together with the difficulty some horses have at times in making water, there is reason to believe that many of them labour under this disorder more frequently than is imagined. That they have stones in their kidneys is well known; the same is observed in the kidneys of sheep and oxen. It is likewise well known that some horses pass a considerable quantity of gravel with their urine, and that they are subject to gravelly complaints. Hence

it may be inferred," he says, " that as the food of horses is exceedingly simple and uniform, the calculous concretions or gravel found in their urinary passages may proceed from the water they drink." Dr. Braken was of the same opinion. La Fosse, in his Dictionnaire d'Hippiatrique, relates a case of stone in the bladder which was cured by an operation. " The horse was about fourteen years old, and was often observed to have pain and difficulty in staling, voiding only a small quantity, which was sometimes bloody. Upon introducing the hand into the gut the stone was distinctly felt, and after a few days' preparation, by bleeding and opening medicine, with a spare diet, the horse was placed on his back, and an opening made in the urethra, near the anus, in the manner I shall soon describe. Through this opening the fore-finger was introduced into the bladder, while an assistant had his hand in the gut, to press up the stone that it might be felt by the operator, who then introduced an instrument, guided by his finger, with which two incisions were made in the neck of the bladder, one on each side. The forceps were now introduced and the stone laid hold of, but it broke into small pieces, which were all extracted, and found to weigh five ounces. No dressing was applied to the wound, but some linseed infusion was injected into the bladder. The horse got up without assistance, was bled three times the same day, and not allowed any solid food. His drink was white water (bran tea); the bowels were kept

open by clysters. On the fourth day he was allowed a small bran mash and some straw. This allowance was gradually increased. There was scarcely any fever; the wound suppurated, and looked healthy. During some days part of the urine passed through the wound, and about the 22d day it was perfectly healed."* The reason for making the opening in the urethra a little below the fundament is, that there is no other method of passing an instrument into the bladder,

* A short time since I received a letter from Mr. W. Mogford, some years ago my pupil and assistant, to inform me that he had extracted a stone from a horse's bladder, which weighed more than five ounces. He says, also, that he is convinced that a stone of eight ounces might be extracted by the means he adopted on this occasion: that is, without wounding the neck of the bladder, as La Fosse did, and without the aid of forceps. When the horse was brought to Mr. M. he observed a peculiar stiffness in the hind parts, a frequent desire to stale, and a dribbling of urine from the penis for some time afterward. By bleeding, embrocating the loins, emollient clysters, and rest, these symptoms disappeared, and the horse was sent to grass. He soon broke out of the field, and crossing the country, returned to a pasture in which he had some time before been kept. This exertion caused a return of the above symptoms, and he was again brought to Mr. M. who now passed his hand up the fundament, in order to feel through the rectum, or gut, what urine there was in the bladder, when he distinctly felt a stone in it. He communicated the circumstance to a surgeon, who could not believe it until he had examined the horse himself, when he also felt a stone in the bladder very distinctly. Mr. M. now proceeded to the operation, and having cut down upon the whalebone rod which had been passed up through the penis, he continued the incision by means of a conductor, and a probe-pointed bistoury, to the neck of the bladder. Through

and that through an opening in this part the finger may be easily introduced into the bladder, so as to let off the urine when there happens to be such a stoppage in the neck of the bladder as cannot be otherwise got rid of, or extract a stone, as in the foregoing operation. It is difficult to make this opening into the urethra, on account of the looseness or flabbiness of the parts, unless a rod of whalebone or cane is first passed up through the yard as far as it can be made to go; the point may then be felt just under the fundament. If an assistant hold this rod, keeping it firmly in the passage, so that the end of it may be distinctly felt, the operator will have a hard substance to cut upon, which will enable him to make an opening with great ease. I have performed this operation upon a healthy horse that was designed for the dogs, and after drawing off the urine, turned him out without applying any thing to the wound. He soon got well without any assistance. I have performed the operation also in a case of retention of urine from a palsy of the bladder, in consequence of stomach staggers. I let off a great

this opening he introduced the first and second finger of his left hand into the bladder, and with his right hand in the rectum he forced the stone towards them, and by these means the stone was conducted to the neck of the bladder, and by a stronger pressure forced it out through the opening that had been made in the urethra. The wound soon healed, except a small orifice through which a little of the urine continued to pass, but the horse had been working regularly without feeling any inconvenience from it.

quantity of urine, which afforded some relief to the animal; but the stomach was so loaded with hard undigested food that nothing could restore it. I cannot agree with Mr. James Clark and Dr. Braken in the opinion that the calculous concretions, or gravel, found in the urinary passages of the horse proceed from the hard water he often drinks. Water that is pumped out of deep wells is 20 degrees colder than pond water, or even running water, in very hot weather, and in winter it is often 8 or 10 degrees warmer. In summer, therefore, when the pores of the skin are open, and perspiring even in the stable, a large draught of water just pumped from the well is apt to disorder the stomach, and give a check or shock to the skin or perspiratory system. This is seen by the shivering or staring coat, which often follows such a draught. A continuance of this practice will derange the digestive function in some degree, and cause an acid to be formed in the stomach. A similar effect may be produced by improper feeding, by suffering a horse to load his stomach with hay, especially bad hay, or other unwholesome provender. In the human body there is always, I believe, an acidity in the stomachs of persons disposed to calculous or gravelly complaints; an acidity is also manifest in their perspiration, and in their urine. To correct this acidity, carbonate of soda and magnesia are taken. It is not unlikely that a horse's stomach may be sometimes in a similar state, and that calculous

concretions may form in the urinary passages in consequence, especially when the functions of the skin also are interrupted by sudden chills, either from drinking pump water in summer, or from being exposed to wet and cold after having been heated by exercise.

Luxurious living and sedentary habits are generally the cause of morbid acidity in the human stomach, and the same cause will produce a similar effect upon a horse. Whenever this is suspected, a little chalk or clay may be mixed with the horse's water, which will correct the acidity of the stomach, and being nearly tasteless, is preferable to soda or magnesia. Mr. James Clark found that by breaking down a bit of clay, about the size of an apple, in a pailful of hard water, every morning and evening, before it was given to horses to drink, the coat was considerably improved. He thinks that the clay softens the water, and so it may; for by mixing up the clay with the water its temperature will be raised a little by the heat of the hands; and what appears to be of equal, or perhaps more, importance is, the clay will serve to neutralize any acidity there may be in the stomach. The stomach is an organ endued in a peculiar and especial manner with vitality, or nervous power, by means of which the food that is taken in is prevented from undergoing those chemical changes which it would in any other situation, if in the same state, and at the same temperature. Now the product of those chemical changes upon

vegetable matter is an acid; and if the vital power of the stomach is diminished by any cause in a considerable degree, whether it be by drinking very cold water, or overloading it with food, it will be unable to prevent those chemical changes from taking place, and more or less of acid will be produced. Keeping a horse on unwholesome food, or allowing him to indulge an inordinate appetite for hay and water, will produce a permanent derangement of the digestive function, and the effect may sometimes be the formation of that peculiar kind of acid on which calculous concretions depend. It is far better then in this, as in all other cases of imperfect digestion, to seek a radical cure of the evil, by a judicious method of feeding, than to trust to temporary remedies. This cannot always be quickly accomplished, but perseverance will generally be successful. Temporary relief may be afforded, as before observed, by mixing a little chalk or clay with the water, and taking care not to give it too cold.* It must not be supposed, from what has been said on this subject, that calculous concretions are a frequent cause of retention of urine in the horse; they are comparatively seldom so. The improper manner in which horses are generally fed, the early age at which they are worked, and the immoderate degree in which they are often worked, are circumstances which either

* Clay generally contains more or less of chalk or carbonate of lime. Pipe clay probably would not answer the purpose, being too pure, or nearly free of carbonate of lime.

separately or conjointly tend to weaken the stomach, and disturb the digestive functions; in consequence of this the blood becomes foul, or loaded with excrementitious matter, the greatest part of which, in the horse, is carried off by the kidneys. This renders the urine more acrimonious than it would otherwise be, and causes the bladder to contract upon a smaller quantity. We may often observe, also, how the urinary passages are stimulated by such urine, making mares appear as if they were horsing, and causing an erection in geldings. As the horse is often staling, in this case, and voiding but a small quantity, and appearing as if he was endeavouring to void more, it is often mistaken for a stoppage in the water, as it is termed, and diuretics are generally given, which, if not too strong, may be of service. But the best plan is to keep the horse on bran mashes chiefly for a few days, and give twice a day, for two or three days, the following powder :

Nitre .... 3 or 4 drams,
Carbonate of soda .... 1 dram, or chalk 2 drams.

Mix for one dose.

Or, No. 2, Nitre, powdered resin, chalk, and levigated antimony, of each 2 drams.—Mix for one dose.

If these powders appear to disagree with the stomach they should be discontinued: in such cases the cordial diuretic is more likely to do good, such

as has been prescribed for asthmatic affection or broken wind.

Retention of urine, strangury, or stoppage of water, may be caused by inflammation and swelling of the neck of the bladder; and this may be brought on by a peculiar acrimony in the urine, such as that produced by cantharides when taken as medicine. The different species of pepper, or grains of paradise, may produce some effect of this kind. The neck of the bladder may be pressed down upon the pubis by an accumulation of dung in the rectum, so as to stop the passage completely. A clyster is always proper on these occasions, for if an accumulation of dung be the cause, it will be speedily removed. But there will be some difficulty in giving the clyster, unless some of the hard dung is first taken out with the hand. The neck of the bladder may be so affected with spasm as to confine the urine. This may be the cause of the stoppage of water that happens in flatulent colic, but I rather think it depends entirely upon an accumulation of dung in the bowels, therefore I always prescribe a clyster in colic, of whatever kind it may be. It may be urged, that as the flatulent colic, and stoppage of water that attends it, are often cured without any evacuation of dung taking place, such stoppages are more likely to be caused by spasm. But an accumulation of air in the bowels may have the effect of pressing down the neck of the bladder. It is of little importance, however, to determine this question. Certain it

is, that in the flatulent cholic, or fret, as it is often named, the bowels are generally in a loaded state; and in those cases which do not yield to carminative medicines, I believe there is almost always a considerable accumulation of dung in the large bowels. When a stoppage of water continues after bleeding and clysters, I have known the following ball afford relief:

Camphor	2 drams.
Nitre	1 oz.

Flour and syrup enough to form the ball.

One dose.

When an evacuation of urine cannot be obtained by any other means, the operation before described must be resorted to in geldings; but in mares a female catheter may be introduced into the bladder. I have drawn off the water from a cow by introducing my fore finger into the bladder, and keeping the neck open until the urine had flowed off; the same may be done in mares. Whenever there is so much urine in the bladder as to render an operation necessary, it may be felt by passing the hand into the rectum. Inflammation of the bladder is a disease that seldom happens; it is distinguished by a frequent evacuation of small quantities of urine, attended with great pain and difficulty in voiding it, and a considerable degree of fever. The urine may be rather high-coloured, or like whey, but not dark-coloured, as if mixed with grumous blood. If the inflammation extends to

the neck of the bladder, there is no urine voided; and if the inflammation proceeds to an incurable degree, the contents of the bladder will become dark-coloured and fetid. Bleed, throw up an emollient clyster, give some laxative medicine, and mucilaginous drinks, such as linseed infusion with a little nitre. The best food is grass, and next to grass, bran-mashes. The neck of the bladder is sometimes weakened by riding a horse a considerable time without giving him time to stale; the weakness is sometimes so great that it cannot confine the urine completely, so that it is constantly dribbling off from the sheath. This is named *incontinence of urine*. I have seen tincture of cantharides do good in this disorder, but the effect was not permanent. In injuries of the back and spinal marrow the bladder is sometimes rendered paralytic; this may at first cause an accumulation of urine in the bladder, until it is forced off in a large stream, and suddenly, by a contraction of the abdominal muscles; the palsy, however, soon extends to the neck of the bladder. This disease is generally incurable.

Two other diseases of the urinary organs remain to be noticed, viz. *Diabetes* and *Hæmaturia*, or bloody urine.

Diabetes consists in an excessive discharge of urine, attended with great thirst, and sometimes with a gradual loss of flesh and great debility. The urine is sometimes limpid and transparent like water; at others high-coloured, and of a very

offensive smell. In slight or recent cases of diabetes a cure may generally be accomplished by the following ball, provided the cause is removed, which is generally new hay, new oats, musty hay or oats, or some other unwholesome provender. But in the confirmed diabetes, when the urine has become stinking and high-coloured, the cure is more difficult. Rest, or voluntary exercise only, and a light nutritious diet, are necessary.

Ball for Diabetes.

No. 1.

Opium...... from ½ dram to 1 dram.
Ginger .... 2 drams.
Gentian-root powder.... 3 or 4 drams.
Oil of carraways...... 20 or 30 drops.
Syrup enough to form the ball.

To be given morning and evening for two or three days, and should the disease then continue give the following:—

No. 2.

Sulphate of copper .... 1 dram.
Ginger .... 1 dram.

Linseed powder and syrup enough to form the ball.

To be given every morning and evening until the disease is cured.

Sulphate of copper has been found an excellent tonic in horses. (See Catarrhal Inflammation.) I have also found the following a good tonic ball:

No. 3.

Sulphate of iron .... 2 to 3 or 4 drams.
Powdered Ginger .... 1 dram.
Powdered Gentian .... 3 to 4 drams.

Treacle enough to form the ball.

I have seen an increased discharge of urine brought on in draught horses by working them beyond their strength; this has been attended with great weakness, especially of the hind parts, and loss of appetite. I have found great benefit in such cases from turning the horse to grass, and letting him remain there for some time, giving him a little *good* hay, or some oats, when it appears necessary.

Hæmaturia or *bloody urine*, is generally caused by some injury of the kidneys in straining to draw heavy loads, carry heavy burdens, or by some accident. Sometimes it happens, as in cows, from an internal cause. When attended with inflammatory symptoms, as it generally is when caused by strains or accidents, bleed and give some Epsom or Glauber's salt; and if the pain and stiffness are considerable, cover the loins with a fresh sheepskin, or rub in some warm embrocation upon them. If the disease continues after this, give the astringent ball.

Warm Embrocation.

Olive oil .... 2 oz.
Strong liquor of ammonia ...... 1 oz.
Oil of turpentine .... ½ oz.

Mix.

Astringent Ball.

Powdered catechu .... ½ oz.
Alum, powdered........... 3 or 4 drams.
Cascarilla bark .... 2 drams.
Flour and treacle enough to form the ball.

To be given once a day, or morning and evening, if necessary. Two or three balls are generally sufficient; if not, add to each ball from half a dram to a dram of opium.

CHAPTER XVIII.

GLANDERS.

THIS is a contagious disorder, and one that is generally thought incurable. The great number of horses that have been destroyed by glanders, especially in the army, and in establishments where great numbers of horses are kept, has excited particular attention to the subject, especially in France and Italy, where many attempts were made, in the beginning of the last century, to discover a remedy for it. Lafosse, an eminent French veterinarian, considered it as a local disease, and thought he had discovered a successful mode of treating it, which consisted in perforating the bones which cover the frontal and nasal sinuses, and injecting through the openings astringent and other liquids. After this opinion had been published, some English farriers made trial of it, and by others deter-

gent lotions were poured into the nostrils; the nose being drawn up for the purpose by means of a pulley. Attempts were also made to cure it by arsenical fumigations, and by burning out the swollen glands under the jaws, or sloughing them out by caustics. The various preparations of mercury, copper, iron, and arsenic, have likewise been tried, and after all the general opinion is that the glanders is incurable.

From the circumstance of horses having sometimes escaped the disorder, though they have been standing in the same stall or stable, or drinking out of the same bucket or trough with a glandered horse, many have been led to doubt its being contagious; and the little care that some large proprietors have taken to prevent the spreading of the disorder, in consequence of such opinions having been held, has been the cause of very serious losses; many instances of which have come within my personal knowledge. That the glanders is contagious has been clearly and indisputably proved by numerous experiments; and the manner in which it is propagated has likewise been satisfactorily demonstrated. At the same time, it is generally believed that the glanders takes place also independent of contagion; but from what causes or circumstances it is then produced, no author has attempted to state precisely.

It has been said, in a general way, that close unwholesome stables, hard work, and bad provender, sudden changes from cold and wet weather

to hot close stables, hard work, and insufficient keep, and, in short, any thing that will weaken the animal considerably, is likely to produce glanders or farcy.

There will be no danger in admitting this opinion if, at the same time, we keep in view the contagious nature of the disorder, in whatever manner it may be produced. For if such cruel and foolish treatment of horses does not produce glanders and farcy, it produces other disorders which are often more speedily fatal than glanders; and if it does not actually produce a disorder, it weakens the constitution in such a degree that the animal is rendered more susceptible of the contagion of glanders, as well as of other diseases. It is from this cause that glanders spreads so rapidly among post and stage-coach horses; while among horses of a different description, its progress is generally slow. Mr. Russel, of Exeter, had, for many years, some glandered teams of horses constantly working from Plymouth to Exeter. But they were worked with moderation, well fed, and taken great care of. I attended these teams for several years, the horses generally looked well, and in excellent condition. Many of them lasted four or five years; some fell off after a few months, as I have had occasion to observe under the article Farcy.

It has been said that glanders has often been produced in the cavalry by putting the horses, immediately after coming from camp, where they

are constantly exposed to the weather, into warm stables, and giving them the full allowance of oats. This, it is true, has often brought on inflammatory disorders, which were very destructive, and sometimes of the catarrhal kind: in which case, they were accompanied with a discharge from the nostrils. The acrimony of the matter would sometimes even ulcerate the nostrils, and the disease would then be considered as a decided case of glanders. I have known the distemper, or epidemic catarrh, produce this effect.

In the distemper that prevailed in the summer of 1799, several horses in the Scotch Greys were said to have become glandered from the violence of the distemper, and were accordingly destroyed. Such cases may have been of a different nature from glanders, though resembling the disease in one symptom, which is generally considered decisive of its being so, that is, in the ulceration within the nostrils.

In 1784, a law was enacted by the French government to prevent any one from keeping a glandered horse, under a penalty of 500 livres. Every animal suspected of glanders had the words "suspected animal" impressed in green wax, on his forehead; and the penalty for selling such an animal, or offering him for sale, was 500 livres.

Persons having suspected animals were to report the same immediately to the mayor, syndics of villages, or other proper authorities, under a penalty of 500 livres. Such horses were then in-

spected by experienced veterinarians, or other competent judges, appointed by the mayor or other officer, and if found glandered were destroyed. If only suspicious, or suspected, they were marked in the forehead as before described. At the same time, a pamphlet on the glanders was published by order of the government, drawn up by two eminent veterinarians, viz. MM. Chabert and Huzard. This pamphlet, which was re-published in the fifth year of the French Revolution, viz. 1797, contained instructions for the veterinary surgeons employed to examine suspected horses, pointing out the steps they were to take with regard to the constituted authorities, and the proprietors of such horses.

The symptoms of glanders are—1st, A discharge of glairy matter from one or both nostrils; generally from one only, and more frequently from the left than from the right nostril. 2d, A swelling of the glands or kernels under the jaw, or between the branches of the lower jaw, and generally on the side of the jaw corresponding with the affected nostril. In all other respects the animal is generally in health, and often sleek, and in good condition.

Sometimes, however, the glanders is accompanied by a disorder of the skin, named Farcy, and then the horse's general health is often affected. Farcy has been considered, by many authors, as a distinct disorder. I have therefore noticed it in a separate article (see *Farcy*), though of opinion that

it is always a symptom of glanders, whether it appear in a local, or in a constitutional form.

Glanders has been divided into two stages, the acute and the chronic, or the first and second stage. The acute glanders is generally attended with acute farcy, such as chancrous ulceration about the lips, face, or neck, with considerable and painful swellings on different parts, some of the swelling appearing as a corded vein. Ulceration and swelling of the hind leg or sheath, or testicles, and sometimes of the fore leg, with corded veins, and farcy buds on the inside of the limb. The acute glanders often spreads rapidly, and either destroys the animal, or renders him such a pitiable and hopeless object, that the proprietor is generally induced to have him knocked on the head.

Chronic glanders is generally very mild in the first stage of the disorder, and does not affect the appetite, or the general health and appearance of the animal. Such horses, when properly fed and taken care of, and worked with moderation, will often continue in regular work for several years.

I have been in the habit of attending several teams of glandered horses since I left the army, and have known them last four or five years. Sometimes, however, they would go off in a few months; and whenever a glandered horse fell off much, and became unequal to his work, he was destroyed. Many glandered horses have been known to get rid of the disorder while working in these teams; and sound horses that have been

put in occasionally to fill up the teams, especially old horses, have escaped the disorder. It is this circumstance, as I have before stated, that has led many to believe that the glanders is not contagious.

The second stage of glanders is marked by ulceration within the nostrils, or an appearance in the matter which indicates ulceration, though sometimes too high up to be seen. The matter is in larger quantity, more glutinous, sticking about the margin of the nostril and upper lips, and sometimes obstructing the passage of air, so that the horse makes a snuffling noise in breathing. The matter is sometimes streaked with blood, and the horse sometimes bleeds from the nostrils in working. When this happens in the first stage of the disorder, however early it may be, it indicates the approach of the second stage. The matter begins to have an offensive smell, which it scarcely ever has in the first stage, though an offensive smell is by many supposed to be a decisive mark of glanders. In the second stage the matter generally runs from both nostrils; the glands under the jaw become larger, harder, and fixed more closely to the jaw bone. They are also generally more tender than in the first stage; the inner corners of the eyes are mattery. The horse loses flesh and strength, stales more than usual, coughs, and at length dies in a miserable condition, generally farcied as well as glandered. It is with this disease as it was formerly with small pox inoculation, and is now with vaccination. If a person

happens to meet with one or two cases, or suppose it were half a dozen, of a horse escaping the glanders after standing in a stable with one that is glandered, he thinks himself fully warranted in concluding that the disease is not contagious. Satisfied with this decision, he gives himself no further trouble about it, and pays no attention to any thing that may be said or written in opposition to his own opinion.

It is a remarkable circumstance that glanders cannot be communicated by applying the matter which is discharged from the nose of a glandered horse to the nostrils of a sound horse, even though a piece of lint soaked in the matter be put up the nostrils, and kept in contact with the pituitary membrane for a short time; or even if the matter be thrown up the nostrils with a syringe. But, if the smallest quantity of matter be applied in the way of inoculation, either to the membrane of the nostrils, or to any part of the body, a glanderous ulcer will be produced, from which farcy buds and corded lymphatics will proceed. After a few weeks the poison will get into the circulation, and the horse will be completely glandered. The circumstance of glanders not being communicated by applying matter to the nostril, enables us to account for a horse escaping the disorder, as he sometimes does, after being put into a glandered stable, or standing by the side of a glandered horse. I believe, however, that glanders is frequently communicated by (accidental) inoculation; and

that there is only one other way in which it can be communicated, that is, by swallowing the matter which flows from the nose of a glandered horse. M. St. Bel, the first professor of our Veterinary College, mixed some glanderous matter with flour, and formed it into balls. These balls were given daily to three horses for one week. The youngest of the horses became glandered in about a month; the others were not affected till some time after. Glanders cannot be communicated through the air by effluvia issuing from the glandered horse, in the way that putrid fever is communicated; for I have kept a horse badly glandered in a stable with other horses, but with such a separation as would effectually prevent the sound horses from swallowing or touching any of the matter: yet they were living in the same air, there being a free communication with respect to any effluvia there may have been between the sound and the glandered horses. This trial was continued for some time, and several horses were at different times placed in this situation. Glanderous matter has been rubbed on a sore place, or ulcer, that had a healthy appearance in a sound horse; it altered the appearance of the sore for a time; but, after a few days, the healing process went on again, and the sore soon got well. From this it appears that, to communicate the glanders, the matter must be applied to a scratch or wound fresh made, and not to a sore on which matter has formed. A sound horse has been inoculated with glanderous matter

that had been mixed with ten times its weight of water. This produced some degree of inflammation, and a small ulcer of a suspicious appearance; but after two or three days, it got quite well. This shows that glanderous matter may be so far weakened by dilution with water, saliva, or the watery secretion from the lower part of a glandered horse's nostrils, when he has the disease in a very slight degree only, as to render it incapable of communicating the disease. On the other hand, when a large opening is made in the skin of a sound horse, and a piece of tow or lint, soaked in glanderous matter, put into it, in the manner that rowels are inserted, the disorder is communicated in so violent a degree that the animal is generally destroyed by it in a few days. The same effect is produced when glanderous matter, mixed with a little warm water, is injected into the jugular vein of a sound horse.

A horse affected with glanders may inoculate himself, and thereby produce the farcy. I have known this happen to a horse while at grass. The horse had an itching in his hind leg, which led him to rub and bite the part, and, at the same time, rub on it the glanderous matter which flowed from his nostril. The possibility of this circumstance taking place may be easily proved by inoculating a glandered horse, in any part of his body, with some of his own matter. There are many ways in which a sound horse may be accidentally inoculated with the matter of glanders, for the

slightest scratch in any part of the body is sufficient. Horses that are cleaned with a curry comb are very liable to be scratched in those parts where the bones are prominent, such as the inside of the hock and knee, the shank bones and the head. To such scratches glanderous matter may be applied by the hands of the groom after he has been examining the nose of a glandered horse, or wiping off the matter from his nostrils; or by the horse himself transferring glanderous matter from the nose of a diseased horse, or from the manger, or other part where any matter has been deposited, for horses are very fond of rubbing their noses against the manger or stall, and a glandered horse will generally try to rub off the matter from his nose against the manger, the rack, the stall, or against another horse; and, if a sound horse happened to stand by one that is glandered, they will often be seen nabbing or gently biting each other, or rubbing noses. In short, having proved that glanders is thus communicated, we can conceive a variety of ways in which a horse may be accidentally inoculated. When a horse has been twitched he generally rubs his nose and lips with considerable force against the manger, and may thus easily inoculate himself with a glandered splinter. Now, the parts where the local farcy first appears are those most likely to be accidentally inoculated, that is, the inside of the hocks and knees, the shanks, the lips, the under jaw, where grooms are often trimming off the long

hair with sharp-pointed scissars, or singeing them with a candle, and often causing an itching, which makes the horse rub the part against the manger. In this way the heels also are often wounded. Horses that are kept on grains, bad hay, or any kind of bad provender, are liable to itching humours, which make them nab or bite their skin, and scratch the hind leg with the opposite foot, and we may often see them bite, rub with the nose, and scratch with the hind foot, alternately, the other leg. If we take all the foregoing circumstances into consideration, and recollect that in M. St. Bel's experiment, a month elapsed before the first horse became glandered; and that, from numerous experiments and observations made with regard to accidental and intentional inoculation with glanderous matter, some days will elapse before any ulcer or chancre is produced; a week or two before farcy buds or corded lymphatics appear; and, probably, a month or two before the running from the nostril comes on (except when a young ass is the subject of experiment). If we reflect upon all these circumstances, there will be no difficulty, I think, in admitting the following positions, or rather inferences or conclusions, with respect to glanders; viz.—That glanders is a contagious disorder, which is communicated by inoculation. and by swallowing the matter; and not by effluvia proceeding from a glandered horse, or a stable in which a glandered horse is, or has been, kept.—Secondly, That the

degree in which the glanders takes place, depends on two circumstances; chiefly on the quantity of matter applied, and next, upon the state or health of the animal that receives it. This is more strictly the case with regard to glanderous inoculation, it having been proved that by introducing a considerable quantity of matter, the horse is speedily destroyed. The same rule will probably be found to hold good in a certain degree, when glanderous matter is swallowed; but the horse's stomach possesses a wonderful power of resisting the impression of poisonous matter, as has been proved by the large doses of arsenic, corrosive sublimate, sugar of lead, &c. that have at different times been given, by way of experiment, to glandered horses. A horse, therefore, may possibly swallow one large dose of glanderous matter without being injured by it, while a repetition of smaller doses will readily produce the disorder. M. St. Bel gave it daily for a week, and the same method has been pursued in other experiments. I am inclined to believe that the disorder is more readily caught by eating the glanderous matter mixed with oats or hay, than by drinking it with water, as in the former case it is so intimately mixed with the food by mastication. M. St. Bel placed two sound horses by a glandered horse, drinking out of the same pail and eating out of the same manger. One of the sound horses was six years old, and just taken from grass; the other, nine years old, and taken from regular work.

The first showed evident signs of glanders at the expiration of 34 days. It fully declared itself in the second at the end of six weeks. Two horses in good health, the one seven, the other eleven, years old, both just taken from work, were placed by a horse that had the glanders. The former caught the disease in 52 days; the other in three months. A horse thirteen years old, very lean, was made to drink the same water out of the same pail with a horse that had the glanders, and continued so to do for two months; he did not catch the disorder. A horse nine years old, in tolerable condition, was placed by a horse that had the glanders in the last stage of the disorder: he caught it at the end of 43 days. M. St. Bel's trials by inoculation were attended with a different result, which I am at a loss to account for; as I have clearly proved, by numerous experiments, that glanders may be communicated almost with certainty by inoculation, especially to young asses. Old horses appear to offer the greatest resistance to it, both by the way of inoculation and by swallowing the matter. M. St. Bel inoculated three old horses with glanderous matter, and they all escaped. He adds, this experiment was repeated on various horses of all ages, without producing any effect. It was also performed on an ox, a sheep, and a dog, without impairing in the least the health of these animals. I have known a horse 15 years old stand by the side of a glandered horse, constantly feeding, drinking, and working

with him for many months, without catching the disorder; and I had occasion to inoculate another old horse several times before I could produce the disease; and at last it was about three months before the glanders took place in him. In younger horses, and especially in asses, the disease is produced with great certainty by inoculation. In doubtful cases, that is, when there is much difficulty in determining whether the discharge from a horse's nostril is glanderous or not, and such cases often occur, I have for some time made use of a young ass, which costs only a few shillings, in order to decide the point beyond all possibility of mistake. If the matter is really glanderous, a peculiar kind of sore or chancre will be produced by inoculating the young ass with it in any part of the body. From this ulcer corded lymphatics or veins, as they are termed, will proceed, and farcy buds or small tumours will take place. After a week or two the animal will begin to run at the nose, and then, in a short time, he will be completely glandered. The disease in this animal is almost always quickly fatal. If the matter is not glanderous, no effect whatever will be produced by it. In the army, and in establishments where many horses are kept, this will be found a valuable test for determining with certainty the nature of a discharge from the nostril. However mild the glanders may be, though no kind of ulceration can be seen within the nostril, and the quantity of matter discharged is but small, and the animal in

good health and condition, the ass will be as certainly infected by the matter as if the disease were in the last stage, or in the most virulent degree.

The following is the method of performing the inoculation:—Cut off a little hair from the side of the neck or any other part of the body, for about the space of half-a-crown; then take a lancet and pass it under the cuticle or scarf-skin, for about a quarter of an inch: it should not wound the skin much, but be sufficiently deep to tinge the lancet with blood, or make one or two drops of blood appear. The matter may be introduced into this opening (first wiping off the blood) by means of a thin slip of wood, of the form of a lancet. If the matter is glanderous, the part will become sore in two or three days, and a scab will form on it, which in a few days will be thrown off, leaving a peculiar kind of ulcer, which will often spread rapidly, causing a painful swelling of the adjacent parts, with corded lymphatics and farcy buds. In about a fortnight the glanders will appear. No other matter will produce this effect. There is only one kind of matter, besides that of glanders, which, according to my experience, will produce *any* effect, and that is the matter of virulent or chronic *grease;* when the discharge from the heels is of a dark colour, something like dirty kennel-water, and of a peculiarly offensive smell. (See *Grease.*) When a horse is inoculated with this matter, a small but very painful tumour will arise in the part. After a few days the skin cover-

ing the tumour will become of a dark colour, and in a few days more the dark-coloured skin will slough off, and leave a healthy granulating sore, which will soon get well of its own accord. A horse who had been thus inoculated, was inoculated also with glanderous matter; and it is worthy of remark, that while the grease sore was going on, the glanderous inoculation had no effect.

When colts are kept at grass, as they always ought to be until they are four or five years old, they will have passed through a disease by which the whole constitution appears to be depurated and invigorated: this disease is named Strangles, and while the colt is at grass, it goes through its course without much inconvenience to the animal, and without requiring the interference of art; but when colts are taken up, broke and put to work, before this disease has taken place, they have often the disease in a very violent degree, especially when kept in warm stables and fed high. The disorder is sometimes so violent as to threaten suffocation; and in London, the operation named Bronchotomy (making an opening in the windpipe) has often been found necessary for their relief. (See *Strangles*.)

Sometimes the Strangles comes on and does not go through its course in the natural way: the swelling under the jaws does not suppurate or become an abscess, but remains hard; or a small superficial opening takes place, from which a small quantity of glairy matter is discharged. This

is named the Bastard Strangles, and is supposed, by the French veterinarians, to degenerate into glanders. It is also believed by French veterinarians, as I have before observed it is by the English, that glanders is often produced by unwholesome food and hard work, with close filthy stables, and sudden changes from cold to heat, or from heat to cold, especially when the weather is wet as well as very cold. This kind of glanders often terminates in consumption, is accompanied with cough, and the discharge is generally from both nostrils, and more like pus than the matter discharged in the glanders arising from contagion. I am inclined to believe that this kind of glanders is not contagious, and should therefore be distinguished by some other name. I would confine the term *glanders* to those discharges from the nose, which were capable of communicating the disease to other horses. This would be found useful in practice. The want of this distinction is another cause of the dangerous opinion I have before made some remarks upon; viz.—that glanders is not contagious; an opinion that has led to the most serious losses.

The reader may form some idea of the extent of such losses when informed that large innkeepers have been nearly ruined by them. I had occasion to condemn eight horses at one time, in one establishment, which, added to those already lost, amounted in value to 500*l.* In one regiment 50 glandered horses were shot in one day. The

23d French dragoons, when quartered in Italy, in March, 1809, had 76 horses at one time affected with glanders and farcy, or suspected of being so affected.

That farcy is a symptom of glanders is proved by its being produced by inoculation with glanderous matter; but it is considered equally certain that farcy takes place from other causes, such as unwholesome food and hard work, with exposure to wet and cold; sudden changes from hot close stables to wet and cold, or the contrary. That disorders resembling farcy in some respects are so produced, cannot be doubted; but I would confine the term *farcy*, like that of glanders, to a disorder that was contagious; and was capable of producing both farcy and glanders. The test I have proposed, that of inoculating a young ass with matter taken from the suspected animal, is an easy method of determining the question. (See *Farcy*.)

I now come to a consideration of the most difficult part of the subject, that is, the cure of glanders. As I have demonstrated the manner in which glanders is communicated, it is needless to say any thing of the mode of prevention, except briefly observing, that it can only be accomplished by preventing any glanderous matter from coming near a horse, or mixing with his food or water; and that the only method of purifying an infected stable, is to remove every thing on which glanderous matter may have fallen, and to wash and

scrape the fixtures, such as the rack and manger, thoroughly. I have in a former edition advised a fumigation with the gas which arises from a mixture of common salt, manganese, and oil of vitriol; because I have found that glanderous matter which has been exposed to this gas is rendered quite innocent, though an ass be inoculated with it; and I have directed the stable to be first thoroughly cleansed, because if any dry hard glanderous matter should remain, the water employed in cleansing the stable will have moistened it, and thereby enable the fumigation to mix with it, and destroy its poisonous quality.

On the Cure of Glanders.

I have already observed that a glandered horse has, in several instances, been known to get entirely free from the disorder while employed in moderate work, and carefully fed and attended, without taking any medicine: I have also seen the disorder cured by mercury, and have known instances of farcy being so cured. The general opinion, both of English and French veterinarians, is, that glanders is incurable, and that farcy is curable. According to my experience there is seldom any difficulty in curing farcy, when it is a local disorder, merely by local applications; but such cures are generally followed by glanders; there being often a considerable interval (from a few weeks to a few

months) between the disappearance of farcy, and the appearance of glanders. When glanders and farcy appear at the same time, or when farcy breaks out in a glandered horse, it depends, I believe, upon the blood being strongly impregnated with the glanderous poison, or containing so much that the nostrils are not a sufficient drain for it. There is one exception, however, to this, and that is, when a glandered horse inoculates himself, as I have seen happen. In that case the farcy is at first local, but it soon becomes a fresh source of contamination, and so increases the disorder in a short time, that it generally becomes necessary to destroy the animal. The cure of glanders, however, cannot be accomplished without great care, and considerable expense; and rarely, I believe, except in its first stage, or mild form. The expense of the cure does not depend so much on the value of the medicine employed, as the length of time that is necessary; and it must also be recollected, that in saying the disease is curable, it is by no means to be understood that there is a certainty of success in adopting the mode of treatment I am going to recommend. Therefore, unless the horse is of considerable value, in good condition, and glandered only in a mild degree, it is not worth while to attempt the cure. It should also be recollected, during the treatment, that as long as there is any discharge from the nostril, there is danger of his communicating the disease to other horses. Corrosive sublimate and calomel

have been found to have considerable power in correcting the glanderous poison, but they weaken the animal so much, that most frequently they accelerate the progress of the disease. I now recommend the mildest preparations of mercury, such as Ethiop's mineral, or quicksilver rubbed down with chalk, or honey and liquorice powder. In the last case of mild glanders I was consulted about, I advised small doses of Ethiop's mineral to be given daily for some time, and a seton to be passed through the swelling under the jaw. The seton, however, was omitted, but the Ethiop's mineral effected a perfect cure. Dr. Malouin, a French physician of the last century, first employed Ethiop's mineral as a remedy for glanders, and, it was said, with considerable success. Since that time, however, this preparation seems to have lost its reputation, not only as a remedy for glanders, but for every other disorder. I have found it on many occasions a valuable alterative, especially when mixed with an equal quantity of *finely levigated* antimony. The dose of Ethiop's mineral is half an ounce, once or twice a day, according to circumstances. A horse readily eats it in his corn. During the whole of the treatment the horse should be regularly exercised and cleaned, and be fed with the best hay and a moderate quantity of oats. The medicine should be continued until the constitution appears to be affected by it; that is, until the mouth becomes sore, the appetite diminished, the bowels loosened, or until the disorder

is subdued. The nose of the glandered horse should be kept clean by sponging it now and then, and the rack and manger should be kept as clean as possible. The stable should be kept clean, and properly ventilated. The only objection to working a glandered horse moderately, is the danger there may be of his infecting others, through the carelessness of the person who has the care of him. A little work rather contributes to health and cheerfulness; and it should never be forgotten, that by making a horse comfortable and cheerful, we improve the digestive functions, and thereby strengthen the constitution.*

The infected horses that gradually got well without medicine, in Mr. Russel's glandered teams, owed their recovery, I have no doubt, in great measure to the comfortable state they were kept in, being taken great care of, having always the best food, and good stables, and being always with

* It has lately been announced in the medical journals, that Mr. Sewel, Assistant Professor at the Veterinary College, has discovered that sulphate of copper is a remedy for glanders, in a dose of two drams twice a day. I have been giving this medicine in cases where the symptoms very nearly resembled those of glanders, with good effect. I begin with one dram twice a day, and after a few days, increase the dose to two drams twice a day. When the appetite falls off, and the mouth becomes sore, it is to be discontinued for a few days, or until the appetite returns. During this interval, bran mashes should be given, but while the horse is taking the medicine he should be allowed a moderate quantity of oats. See some observations on this subject at the end of the chapter on Catarrhal Inflammation.

their companions, and in moderate but regular work. Gibson relates a case of confirmed glanders which he cured by giving balls composed of cinnabar, with gum guaiacum, myrrh, saffron, and Castile soap, and now and then a drink made by boiling guaiacum wood, rhaponticum, and dock root with spring water or lime water; and to heal the rawness and erosion on the inside of the nostril, an injection was sometimes used made of vinegar, spirit of wine, and egyptiacum. The only mercurial in this medicine is the *cinnabar*, which, like Ethiop's mineral, is composed of sulphur and quicksilver, but the ingredients are more intimately combined in the cinnabar. Gibson, however, appears to attribute the horse's recovery mainly to the care that was taken of him. "I had him removed," he says, "to an infirmary stable belonging to the troop, where he could be kept warm, and in the hearing of the other horses, which greatly cheered him. He was walked out every day, and had his exercise in the free open air. He was constantly curried and dressed thoroughly, and had his rack and manger often washed and scraped, and his pail cleaned and washed almost every time it was used (a useful precaution, as he was thus prevented from swallowing his own poisonous matter). This induced him to eat and drink what was sufficient, and by that means contributed greatly to his recovery; for though there was little alteration during the winter in the swelling under his jaws, or in the running from the

nose, yet he got strength daily, his flesh grew firm, and his coat began to look smooth and shining. (The horse had fallen off in appearance, and began to grow weak before he was removed to the infirmary stable.) In the spring following the kernel began to lessen, the running at the nose looked whiter, and of a better consistence, and towards the end of the summer the swelling was no bigger than a hazel nut, and the running, for the most part, quite gone, and at last ended in some few drops of clear water, which used to distil now and then from the nose, so that it was somewhat above a year before the cure was completed." So cautious was this excellent practitioner, that this horse was not trusted in the ranks till another year had elapsed; he then did his duty, and never had a return of the complaint. He relates another case in which he succeeded, but says, "The other horse baffled all the efforts I could make for six or seven months, though he took the same medicines, and had the same care taken of him, till at length he broke out in biles in several places, which every one that saw him pronounced to be the Farcy; but I was of another mind, for these never followed the course of the veins, but appeared in some insterstices between the tendons of the muscles. The matter was laudable, and of a good consistence, and though many of these biles came in succession one after another, yet those that broke soon healed up, the horse grew hearty and active, the kernel and running at the

nose lessened, and abated gradually, and in a few months after he was perfectly cured." Here we have two cases minutely described which were treated successfully, and they appear not to be the only cases which occurred in his practice. Before any attempt is made to cure a glandered horse, with a view to publishing the case if it prove successful, it would be right to make it appear satisfactorily that the horse is really glandered. This rule has been seldom attended to; for in general when such cures have been published, or talked of, it has been merely asserted that the horse had the glanders. Now it is well known that there are diseases which resemble glanders, and that the most experienced practitioners are sometimes unable to give a decisive opinion upon such cases. A blow on the nose, for example, may injure the bones, and cause a running from one nostril, and a swelling of the kernels under the jaw, for years, which will exactly resemble glanders, except in not being contagious, or fatal in its termination. Though Gibson was unacquainted with the test which I have suggested, that of inoculating a young ass, he gives such a description of the case as leaves no doubt in the mind of the reader of the horse being decidedly glandered. He says, "Both these horses were in the first troop of guards; one of them had been in a stable where two or three horses had died of glanders. He was coming eight, and had no visible ailment besides a knot under his jaw, which was pretty large, and a nasty

foul running from his nose on the same side." It will be much better, however, in future, in all experiments that are made relative to glanders for the purpose of publication, to prove that the horse is really glandered by the test I have proposed; for if the result of such experiments should be published, there will be no doubt entertained by the reader of the disease being really the glanders. It is to be regretted that the veterinary authors of this country have not been more minute or particular in their description of cases. The French leave no circumstance unobserved either in the living or dead subject. Their descriptions extend even to circumstances or appearances which are certainly not essentially necessary to be known, but this is better than the omission of any thing that is in any degree useful. In the pamphlet before noticed, by Chabert and Huzard, they divide the disease into three stages, or degrees. "In the first, there is a discharge, from one nostril only, of a whitish humour, which is inconsiderable, except when the horse has been exercised for some time. There is an increased redness of the membrane within the nostrils. The swelling of the glands under the jaw is on the same side as the affected nostril. There is a healthy appearance of the horse's coat, and he seems in good health and condition. The urine is crude and transparent."

"The symptoms of glanders arising from communication with a glandered horse are different

from those of glanders produced by bad provender, excessive exertion, &c. In the former, the discharge is from one nostril only, or much more from one than from the other; and there is no cough, or other symptom of catarrh or cold, or any other disorder. In the latter, on the contrary, there is cough, either dry or moist; and it is preceded by loss of appetite, or falling off in appetite, and depression of spirits."

"The symptoms of the second degree are the altered appearance of the running from the nose, which has become more glutinous, and adheres to the edges of the nostril with a contraction and partial closing of the nostril, an increased tenderness of the swelling under the jaw, which begins to adhere more closely to the jaw-bone. In the third degree, the running from the nose becomes of a darker colour, sometimes streaked with blood, and of an offensive smell. There is sometimes a bleeding from the nostril. The running is from both nostrils. There is a slight tumefaction of the under eyelid, a swelling, or elevation of the bones of the nose or forehead. Loss of appetite, debility, cough, and swelling of the legs and sheath, or testicles, if a stallion; also lameness without any apparent cause. Chancres or ulceration within the nostrils, great tenderness of the glands under the jaw, which now stick close to the bone. A small discharge of matter from the inner corner of the eye on the same side as the affected nostril, or in both eyes, when the running is from both

nostrils. When these symptoms appear the disease soon proceeds to a fatal termination. The above symptoms are not *all* peculiar to glanders, but may take place also in strangles, bastard strangles, peripneumony, distemper (*morfondure*), and pleurisy. The discharge of a glutinous matter from the nose, the swelling of the glands under the jaw, and the ulceration within the nostrils are symptoms which occur in the above diseases as well as in glanders, but with this essential difference. In the latter, the three symptoms just noticed generally occur about the same time, which is not the case in glanders; and are, in the first instance, acute and inflammatory, and such as to excite apprehension of immediate danger. They go through their course in a short time, the running from the nose gradually diminishes, the blood is depurated, and a perfect recovery takes place. Glanders, on the contrary, is extremely slow in its progress: the first degree often continuing a considerable time; and it is only towards the end of the second degree, or the beginning of the third, that the symptoms appear to indicate an alteration, or disease of the internal organs. This slow progress of glanders, and especially its continuing for some time without any apparent injury to the animal's health and condition, the state and progress of the swelling under the jaws, and the ulceration within the nostril, furnish such clear marks of distinction between those diseases and

glanders, that they cannot well be mistaken for each other."

When in a regiment, or any large establishment of horses, several of them are affected with a slight discharge from the nose, and a little swelling under the jaw, however trivial the symptoms may appear, there is reason to suspect danger. In such cases, the slight appearance of disorder, and the horses appearing in other respects in good health, ought rather to excite alarm than otherwise. In such cases Chabert and Huzard advise one of the suspected horses to be killed in order to determine by an examination of the body, what the nature of the disease really is, there being certain appearances, they say, in the internal parts, even in the earliest stages of glanders, which clearly characterize the disorder. I believe that there are such appearances, but not always sufficiently conspicuous to be observed by any that are not conversant with morbid anatomy. Now, the test I have suggested is easy in application, and decisive in its effect in a few days. When a young ass is employed for the inoculation, I have found the mildest, and a very inconsiderable discharge from the nostril, produce the most decisive appearance in a few days, that is, a severe degree of farcy, which, in a fortnight, produced well marked glanders. The mare, from which the matter was taken, was in excellent health and condition, and in regular work as a gentleman's saddle horse.

Her work was only moderate exercise. There was a poney kept in the same stable, that the proprietor entertained no kind of suspicion of. I found, however, upon examination, that there was a very slight discharge from the nose, and a swelling under the jaws; and, upon trying this matter on an ass, it produced a spreading farcy ulcer with farcy buds like that of the mare. I have reason to believe that an *old* ass, in good health and condition, is not so readily affected as a young one; and all those who have made many experiments and observations on glanders seem to concur in the opinion that young horses take it much more readily than old ones, and that old horses often resist the contagion altogether. Such was the result of one of St. Bel's experiments; and the same happened when an old horse (from fifteen to twenty years old) was put into a glandered team. When a horse lives to the age of fifteen or twenty, it may be reasonably presumed that he was originally possessed of a vigorous constitution, and, probably, that he went through the strangles at grass, and was not taken into the stables, and put to hard work, and kept on hay and oats, when he was two or three years old. It is lamentable to see the great number of horses that are crippled and ruined in their constitutions before they are seven years old, especially when we consider that, if properly treated, they would probably continue serviceable, on an average, till the age of twenty.

According to MM. Chabert and Huzard, the following morbid appearances are observable on opening glandered horses:—1st. "Tumours are generally found on the lungs, such as hydatids, tubercles, and obstructions. The bronchial glands are enlarged, and sometimes contain matter, and this sometimes is the only morbid appearance observable in the lungs. The membrane which lines the windpipe and its branches is often inflamed and ulcerated, and the latter are often filled with matter similar to that discharged by the nostrils. The internal surface of the bones, which form the nose and the cartilaginous partition between the nostrils, are often carious and covered with matter. The spleen, the liver, and the kidneys, are often diseased, sometimes in a considerable degree. When these last organs are injured, it may be known by the pus discharged with the urine. 2d. On opening the skull, the brain is found softer and more flaccid than in the healthy horse, and there is generally more or less water in the ventricles. The plexus choroides appears gorged, the chrystalline humour of the eye dull, and without consistence, or, as if it were decomposed. It is not to be supposed that all these morbid appearances will be found in the same horse, or that they are all necessary to enable us to declare that the horse was glandered; it is sufficient if some of them are found, provided the external symptoms during the horse's life were such as we have before described as characteristic of glanders."

CHAPTER XIX.

FARCY, OR FARCIN.

THIS disorder is a symptom of glanders, and may be either local or constitutional. There are other diseases which, from bearing some resemblance to it, have obtained the same name; such is the Water Farcy, which appears to be nothing more than common dropsical swellings of the legs, sheath, or belly. Farcy appears as small tumours, commonly named farcy buds, or buttons, most frequently on the inside of the fore or hind legs, the inside of the thigh, the lips or face, the neck, and sometimes on other parts of the body. These buds are not, I believe, always the first symptom, either of local or constitutional farcy. On a careful examination we shall generally find a small ulcer, or chancre, from which the glanderous poison, producing the buds, or tumours, are derived. This small ulcer is often the effect of accidental inoculation with glanderous matter, either by the curry comb, the horse biting himself, and rubbing his nose on the part, or another horse that is glandered rubbing his nose upon it, or by a horse transferring glanderous matter from the manger, pail, or drinking trough, by means of his nose or lips. A part scratched by the curry-comb, especially about the inside of the legs, where there are projecting bones, which are more ex-

posed than other parts to accidental scratches, may have glanderous matter applied through the carelessness of the ostlers or groom who may be looking after a glandered horse, without knowing it, and, if they do know it, they have no idea of danger, or of the possibility of communicating the disease in such a manner. A horse may inoculate himself by rubbing his nose and lips against a manger where glanderous matter may have been deposited even for weeks or months before. I have known a glandered horse inoculate himself at grass, probably by nabbing his hind-leg, and rubbing his nose against the part. A considerable degree of farcy was thus produced on the hind leg. Horses after being twitched are very apt to rub their noses with considerable force against the manger, where they may wound their nose or lip with a splinter that has glanderous matter on it. The disorder may be communicated through the negligence of farriers, who, after attending a glandered horse, should always wash their hands with soap and water. That farcy may be thus produced has been proved by numerous experiments; and a very small quantity of matter, one drop, or one grain, for example, is quite sufficient to produce the most virulent farcy and glanders in the healthiest horse.

When glanderous matter has become dry, and adheres to the manger, the stall, or other part, it may be moistened by the horse licking the part, and then rubbing his nose or lips upon it, and

wounding himself with a glandered splinter; and when farcy is thus produced, it is of course a local disorder on its first appearance, but how long it continues so is uncertain. The appearance of farcy buds show that the poison has been absorbed from the ulcer or chancre were it was first applied; and the corded veins, as they are termed, are the superficial absorbent vessels, or lymphatics, inflamed and swollen by the acrimony of the poisonous matter they are conveying. When the disease has proceeded thus far we cannot arrest the progress of the poison by applying caustics or other remedies to the original ulcer. Such applications will cause the ulcer to heal, but the poison will gradually get into the circulation, contaminate the whole mass of blood, and produce its peculiar or characteristic symptom, that is, a discharge from the nostril, and a swelling of the glands or kernels under the jaws. This symptom is named glanders. The interval between the apparent cure of farcy and the appearance of glanders varies considerably. I have known five or six months intervene; at others the interval does not exceed a few weeks. Asses are more susceptible of the disorder than horses, and much more readily destroyed by it. A healthy young ass became completely glandered in a fortnight after inoculation, whereas a horse that was given up for a similar experiment did not become glandered till about three months had elapsed. Asses generally die of glanders in a few weeks, whether produced accidentally or by inoculation.

Horses labouring under glanders, if well fed, and worked with moderation, will sometimes live four or five years, and keep in good condition. I have known several horses get completely well while worked and fed in this way; but it is very hazardous to work such horses, and it ought not to be done. I have, as is observed in the preceding chapter, been in the habit of attending two teams of glandered horses for several years that worked in a common stage waggon from Exeter to Plymouth. They were always well fed, and taken great care of, and I do not recollect any instance of their doing mischief, or infecting other horses. As they dropped off, the teams were reinforced by horses that happened to become glandered on another line of road belonging to the same proprietor, or by horses free from glanders that did not suit other teams, or were not supposed good enough for them. Such horses would sometimes escape the contagion, at others they would become glandered in a few weeks.

After some time the person who had the care of the teams from which these reinforcements used to be drawn became convinced, by experiments, of the contagious nature of glanders, and therefore diligently employed every precaution that could be thought of to prevent the disorder from occurring. In consequence of this, and the great care that was taken on the line of road where the glandered horses were worked, the number gradually diminished; and the last time I heard there was not

one left. The proprietor of these teams was Mr. Russel of Exeter. About the same time I attended the horses of Messrs. Sweet and Co. common carriers, of Exeter, who had also a team of glandered horses. Here the work was harder, and somewhat irregular. The feeding did not appear to be so carefully attended to, nor was the general management of those horses in any respect so good as that of Mr. Russel's. In consequence of this the horses did not last so long, and much loss was sustained so much so, that the two concerns afforded a striking proof of the truth of a former observation, that it is decidedly the interest of all horse proprietors to work those useful animals with moderation, and feed them properly. But to return to our subject, the Farcy.

It is a general opinion, I believe, among those concerned with horses, and of some practitioners, that farcy takes place independently of contagion, either from chills, unwholesome food, close stables, over exertion, or other debilitating causes. Under this impression a strengthening mode of treatment has been recommended, with medicines of the tonic kind, such as sulphate of copper (blue vitriol), sulphate of iron (salt of steel), arsenic, &c. These have been generally joined with some preparation of mercury, especially corrosive sublimate, under the idea that besides the general debility under which the animal labours there is a peculiar poison mixed with the blood. If the farcy is produced

by the debilitating causes before noticed, then it must be admitted that the poison is engendered by the same causes. And though there may be a doubt in the minds of some practitioners of the farcy being contagious, yet they cannot but admit that farcy will often produce the glanders; that is, that it often terminates in glanders, and that glanders so produced is contagious. From this view of the subject it will appear, that whether farcy originates in a peculiar state of the body, brought on by chills, bad food, hard work, and close stables, or in *contagion*, some specific antidote is necessary to the cure, and that this specific is mercury, assisted by a generous diet, and medicines of a strengthening nature.

Mercury, in all its forms, appears to be an antidote to the poison of farcy and glanders; but mercury is itself a debilitating medicine, and on that account, when given injudiciously, often accelerates the progress of farcy and glanders, and brings on a fatal termination. Corrosive sublimate (oxymuriate of mercury) is the preparation generally employed as a remedy for farcy, but it weakens the body more than any other, and by its action on the kidneys often causes an enlargement, and probably a serious derangement of those organs. I am inclined to give the preference to the milder preparations of mercury, especially that which is commonly named blue pill, and Ethiop's mineral. Quicksilver rubbed down with chalk is

also a mild preparation. In whatever form mercury is given, its debilitating effects should be guarded against by strict attention to diet, exercise, and grooming. A stable rather warm than otherwise, but not close, water with the chill taken off, food easy of digestion, and in quantities that may not oppress the stomach, hand-rubbing the legs, walking or gentle trotting exercise in a sheltered situation, green food, such as vetches, in the season, or a moderate quantity of carrots, malt mashes now and then, and sometimes a little sweet bran, or bran and malt, may be given. With regard to local or topical applications, the ulcers may be dressed with lunar caustic, or a solution of blue vitriol, or blue vitriol finely powdered, or red precipitate; and when there are corded veins, the whole of the affected surface may be blistered. One of the following medicines may be given daily, or twice a day, in the horse's corn, until some effect is produced upon the mouth, or the kidneys or bowels, or upon the constitution generally, or until the disorder is cured completely: for if circumstances should occur to render the use of the medicine improper for a time, it will be adviseable to give it again when such circumstances are removed, or have ceased. It is considered the safest plan to continue the use of the medicine for a week or two after all the symptoms of farcy have disappeared. (See GLANDERS.)

Medicines for Farcy.

No. 1.

Take of blue pill, (mercurial pill, pilula hydrargyri,) from half a dram to two drams; rub it up with a little bran, and mix it with the horse's corn.

No. 2.

Take of Æthiop's mineral half an ounce; mix it first with a handful or two of bran, and then with the horse's corn.

No. 3.

Take of calomel and precipitated sulphuret of mercury, of each from 20 to 30 grains. Gum guaiacum from one dram to one dram and a half. Mix, by rubbing them well together in a mortar.

Either of the above may be formed into balls, should that form be preferred, by means of a little flour and treacle.

No. 4.

Take of corrosive sublimate from five to ten grains; carbonate of iron, from half a dram to two drams; carraway seeds, recently powdered, half an ounce; treacle, enough to form the ball.

If blue vitriol (sulphate of copper) is tried, the dose is a dram. Half a dram or more of opium, with a little ginger, may be added to No. 4, if the bowels are at all loosened by it.

The following ball was prescribed for farcy by Mr. Coleman, professor of our Veterinary College :—

Sulphate of copper	1 dram.
Calomel	1 scruple.
Common turpentine ..	3 drams to ½ oz.
Liquorice powder, enough to form the ball.	

In India a disease often takes place during the rainy season, named *Bursautee*, which seems to resemble Farcy. The disorder is often fatal. It generally ceases to prevail after the rainy season is over.

Another disease among horses in India, of this kind, but confined to the sheath, is named *Sozauk*. It is supposed to be caused by the stinging of flies. The natives generally use local remedies only, such as blue vitriol. I have many times seen farcy attack with great violence, and accompanied with symptoms of fever or general inflammation, which appeared to require copious bleeding. The blood drawn in such cases was covered with a thick coat of buff. These cases were quickly followed by glanders, and generally ended fatally. Stallions are sometimes attacked with swelling of the testicles, which terminates in farcy and glanders.

I should have observed, in speaking of the local treatment of farcy, that when the buds become soft they may be opened freely, so that no hollow part or cavity may be left, some lunar caustic, or

a little finely powdered blue vitriol, may then be applied to them.

The farcy buds appear to be caused by the valves of the lymphatic becoming inflamed and suppurating; in other parts the inflamed lymphatic appears as a cord or corded vein, as it is termed. The lymphatic glands become swollen and inflamed in farcy, especially those between the inside of the fore-leg and chest, in the groin, and the under jaws.

CHAPTER XX.

CUTANEOUS DISEASES.

Surfeit.

THIS is a disorder of the skin, consisting of small tumours or pimples all over the body, which become small scabs, and then gradually get well, while fresh ones continue to break out and pursue the same course. The horse has generally a dry unhealthy coat, and is hide-bound; sometimes there is swelling of the hind legs likewise, and general debility. This disorder is commonly produced by unwholesome feeding and general ill treatment. The remedies are wholesome food, good grooming, and salutary exercise. The following alterative powder is to be given daily, and the horse's water should have the chill taken off. In summer he should be turned to grass.

Alterative Powder.

Take of levigated antimony, powdered resin, and nitre, of each 2 or 3 drams.

Mix for one dose.

If the horse feeds badly, give the following cordial ball every morning, or half a pint of warm beer with a little sugar and ginger in it.

Cordial Ball.

Powdered ginger, 1 dram; powdered allspice, 2 drams; fresh powdered carraway seeds, 3 drams; treacle, enough to form the ball. If this fail, try the following

Tonic Ball.

Sulphate of iron .... 2 to 3 drams.
Powdered gentian .... 3 to 4 drams.
Powdered ginger .... 1 dram.
Treacle, enough to form the ball.

I have known a horse suddenly break out in the surfeit from drinking cold water when fatigued and heated. I once saw a horse bled when in this state, and before he had lost two quarts he became faint, staggered, and fell down, but soon got up again. This horse had just come off a journey. A cordial drench was then administered, which restored him, and enabled him to return to his home.

Drinking cold pump water in hot summer weather will sometimes produce surfeit: but more frequently shivering and a rough staring coat.

Hide-bound.

When a horse's hide or skin sticks to his ribs, as it were, and cannot be drawn out or moved, as in the healthy state, he is said to be hide-bound. It indicates great weakness and poverty, and sometimes a diseased state of the mesenteric vessels, and consumption. It is generally occasioned by ill-usage, and bad or insufficient food, and can only be removed by proper feeding and good treatment.

A good piece of grass is the best remedy, especially in the early part of summer.

Mange.

This is also a disorder of the skin, and is manifested by a horse's itching and rubbing himself continually, until the hair comes off and small scabs appear, and the skin becomes thickened and wrinkled. It appears sometimes to be a complicated disorder; the horse being at the same time affected with grease, or covered with lice, and the whole body sometimes covered with sores or scurf. Such bad cases depend upon a depraved state of the blood and general debility: in such horses the bowels are generally loaded with worms of all kinds, and, upon examination after death, I have found several of them dropsical. In cutting through the abdominal muscles of a horse far gone in this kind of mange, complicated with grease, I met with an immense number of small

worms, like those commonly found in the large intestines, and which have been named the whip-worm. They had not penetrated through into the abdomen in any part, and had no kind of communication with that cavity, or with the bowels. This is the only case of the kind I ever met with; but I have often found a smaller and more slender kind of worm, like ascarides, in the mesenteric artery, and in the trachea, and a kind of hydatid in an abscess between the pectoral muscles.

Mange is more frequently met with among waggon horses than others, especially such as are fed improperly, and exposed much to wet and cold. The wet weather we had towards the end of last year (1821) caused an itching complaint among sheep which had the appearance of mange, and caused them to rub and bite off the wool. Upon examining them it was found to be occasioned by lice; and in one flock, where it prevailed to a considerable extent, the application of remedies was deferred until the lambing season was over. By this time a change of weather happened, and the season was remarkably dry, mild, and favourable, in consequence of which all the sheep got well without any application. I knew another flock, however, where this itching disorder continued, and degenerated into mange or scab. This, I believe, was entirely owing to bad management and the carelessness of the shepherd.

When mange appears among draught horses, it generally occurs where the collar and harness

bear; also about the mane, at the roots of the hair, and in the tail. The face, neck, and shoulders, also are sometimes affected. It generally occurs, in its worst or highest degree, among horses that are taken no care of, worked hard, and fed upon unwholesome provender; but being exceedingly contagious, may attack horses of all kinds and conditions. The pleasure a mangy horse feels from rubbing himself is such, that the disorder may easily be discovered in a horse when it has been patched up, and cured in a temporary manner, merely by rubbing him with a stick, or scratching him: he will then, unless the mange is completely cured, express such pleasure by the motions of his lips, and the inclination of his head, as will evidently betray it.

The mange is at first a local disease, and may be cured by local remedies. When once established in a stable, so little pains are taken in removing the contagion by washing the harness as well as the manger, stall, and every thing on which it may have been deposited, that notwithstanding the frequent application of effectual remedies, it is continually breaking out again, and is scarcely ever entirely got rid of. Sulphur is the best remedy that can be employed, and if mixed with train oil and oil of turpentine, will effect every thing that can be accomplished by external applications. The following are the proportions:

Mange ointment or liniment.

No. 1.

Flower of sulphur, or sulphur vivum,
finely powdered .... 1 oz.
Train oil .... 3 oz.
Oil of turpentine .... 1 oz.

Mix.

No. 2.

Oil of turpentine .... 3 ounces.
Oil of vitriol .... 1 ounce by measure.
Mix cautiously, and stir the mixture; when the boiling has ceased, and they are perfectly combined, add

Melted hog's lard .... 8 ounces.
Train oil .... 4 ounces.
Oil of turpentine .... 2 ounces.
Flour of sulphur, or sulphur vivum,
finely powdered .... 4 ounces.

Mix.

This preparation is stronger than No. 1, but more expensive, and more difficult to make. No. 1 is always sufficient, if properly applied, and should therefore be preferred. Mercurial preparations should never be employed; there is always danger in using them. I have, it is true, when a small patch of mange has appeared about the face or cheeks of a saddle horse, employed white precipitate, rubbed up with a little hog's lard and oil,

to avoid the disagreeable smell of sulphur, or the ointment of nitrated quicksilver. But this, if applied to a large surface, might be absorbed and do mischief. Before the mange liniment is rubbed in, not only the mangy spots, but all the surrounding parts, should be well combed with a blunt currycomb, by which the loose cuticle and scabs, if there are any, will be rubbed off, and the hair detached from mangy parts that were not before observable. The liniment may then be applied with good effect, and should be well rubbed in with the hand; and this will effectually guard the operator from all danger of infection. The best internal remedy is flower of sulphur, about an ounce of which may be given daily in the horse's corn. In inveterate cases of mange that resist this remedy, two drams of Ethiop's mineral, and two drams of levigated antimony, may be added to the sulphur; but this should not be continued after the mouth becomes sore, or the breath offensive. Small doses of sublimate have been prescribed in inveterate cases of mange, and other obstinate cutaneous disorders: I have seen it do good in the red mange of dogs; but it is a dangerous medicine, and must be used cautiously. When sublimate is employed it must be made into a ball with linseed powder and treacle, and the dose should not exceed ten grains, which may be given daily. I should advise smaller doses being first tried, such as three or four grains. The dose for a dog is from a quarter to half a grain.

Grease.

This disorder, when it occurs in the stable, is always the effect of negligence and bad management. It consists in a swelling of the hind legs, and a discharge of stinking matter from the heels. The best method of treating this disorder, is to wrap up the whole heel completely in a large emollient poultice. This is most conveniently done by means of a long flannel bag, for a worsted stocking is seldom large enough. The lower part of the bag should be secured round the hoof; the bag should then be filled with the following poultice, and tied above by means of listing, or a narrow flannel bandage:

Emollient Poultice.

Take bran 1 quart, pour on it boiling water sufficient to make it a very thin mash: after standing ten minutes add of linseed cake, or meal powdered and sifted, 4 ounces. Mix them well together, taking care there are no knobs or clots.

Boiled turnips mashed up in their water, that is, the water not pressed off, and mixed with linseed meal or oatmeal, will make an excellent emollient poultice, and may be substituted for the former. The poultice must be continued until the pain has been removed, which will generally take several days. It must then be left off, and the heels washed with a solution of blue vitriol, now named sulphate of copper. On the first occurrence

of the disease a mild dose of physic should be given, with the usual preparation and caution; and after the operation of the physic, the bran mashes should be continued, and the horse should be allowed only a very moderate quantity of good hay. A bran mash should be given three times a day, in each of which there should be put ½ ounce, or 2 drams of nitre, 2 drams of resin, and 2 drams of livigated antimony. The horse should be put loose into a large box, or out-house, where he can move about a little; and when the poultice is left off, he should have walking exercise twice a day, or be turned into a field or paddock. Green food is desirable, and if the horse is in low condition some oats should be allowed, but not before the poultice is left off. Grease may generally be cured by this treatment. Inveterate and obstinate cases, however, sometimes occur, which, from having been long neglected, are not so readily cured, and something stronger than the solution of blue vitriol may be required. When, therefore, the poultices have been properly applied, the physic and nitre given, and the solution of blue vitriol does not cure, the following lotion may be applied. In these inveterate cases it will be found that the pain is peculiarly severe, causing the horse to catch up his hind leg suddenly when first moved, as if he were cramped. The discharge consists of a dark-coloured, dirty-looking fluid, and is peculiarly stinking and offensive; the hair is erect, or furzy, as it is termed, and the animal loses flesh from the

pain, and is incapable of lying down. A saturated solution of blue vitriol will generally cure even those cases when properly applied. The following, however, is stronger, and will often act as a blister; one application of it is generally enough.

Lotion for inveterate grease.

Corrosive sublimate, now named oxy-muriate of mercury	1 dram.
Muriatic acid	3 drams.
Water	1 pint.

Mix.

After the cure of inveterate grease, a rowel, or rather setons in the thighs, may be useful, especially when the horse cannot be turned to grass, which, in some cases, is the only remedy.

Mallenders and Sallenders.

Mallenders is a disorder that attacks the back part, or flexure, of the knee joint, and depends upon a combination of mange and grease. It appears as a scurfy or scabby eruption, and is often very painful, causing some degree of lameness from the pain the animal feels in moving the joint. Sometimes it is not so considerable as to produce lameness, or any apparent inconvenience, but generally becomes troublesome and obstinate unless attended to. Sallenders occur in the fore part, or flexure, of the hock joint, and is of the same

nature as mallenders. They should first be well washed with soap and water, and all the scurf and loose cuticle completely removed. They may then be cured by the following ointments:

Ointment for Mallenders and Sallenders.

No 1.

Ointment of nitrate of mercury, commonly named citrine ointment.

No. 2.

Hog's lard, 2 oz.; red precipitate, finely powdered, 2 drams.

No. 3.

Hog's lard, 4 oz.; melt, and stir in Gourlard's extract, 1 oz.

Cracks or Ulcers in the Heels.

These are frequently occurring, especially in saddle horses, even when properly treated, except in one particular, and that an important one, for it is occasioned entirely by the foolish practice of trimming out the heels. This renders them liable to injuries in travelling on gravelly or muddy roads, or indeed in any kind of road, as loose stones cannot be avoided. In this way small bruises take place in the bend of the pastern, the skin is inflamed, and an ulcer or crack follows. These cracks are very painful, and often cause lameness: from improper treatment they often prove very obstinate. An emollient poultice should be first applied, and continued for a few days, or until the

inflammation has completely subsided. The crack or ulcer, as well as all the hollow part of the pastern or heel, should be covered with the following paste, which is to remain two or three days, and then washed off and repeated. When the crack is perfectly healed or dried up by this astringent paste, a little sallad oil or fresh hog's lard is often necessary to supple the part. In obstinate cases it is necessary to keep the horse perfectly at rest until the crack is healed, and sometimes to apply the following ointment, spread on a pledget of tow, and confined by a bandage:

Take of litharge plaister .... 2 ounces.
Best salad oil .... 1 ounce.

Melt slowly, and when removed from the fire continue stirring until it is cold.

Three of these dressings will generally cure the disorder. During this treatment the horse must not be taken out for exercise, but be turned loose into a cool box or out-house, where he may move himself about gently. As he takes no exercise during this time, he should be fed with bran mashes, and have only very little hay, as his bowels would otherwise be loaded with excrement, and much mischief might thereby be done. Though the disease is entirely local, it may not be amiss to give half an ounce of nitre once or twice a day in his mash.

Horses that are constantly kept trimmed out in the heels often lose the hair from the part by the

constant friction of the dirt of the roads; and, besides the deformity this occasions, they are still more liable to those painful cracks. I have lately found the following treatment successful. If the cracks are very painful, poultice for one day and night, then wash them three times a day with the following lotion, for one or two days, after this apply the astringent ointment, which generally heals them in a short time:

Lotion.

Super-acetate of lead and sulphate of zinc, of each	2 drams.
Water	8 ounces.

Mix.

Astringent Ointment.

Super-acetate of lead, sulphate of zinc, vinegar, of each 2 drams, rub well together in a large mortar, then add melted hog's lard, 4 ounces, and continue stirring briskly until perfectly incorporated and nearly cold.

Crown Scab and Rat Tails.

These are of the same nature as mallenders, and may be cured by the same means. They generally, however, leave a blemish, consisting in a loss of hair, and thickening of the cuticle. Crown scab occurs on the coronet, and rat tails in lines on the back part of the leg, extending from the fetlock upwards.

Treads.

Waggon horses, especially in mangy stables, have often an itching about the heels, which causes them to injure themselves, sometimes severely, in endeavouring to rub or scratch the part with their own feet. It is thus that they tread on the coronet or heel, and sometimes cause quittor. The injury, however, is seldom so severe as this, and may be soon cured by poulticing for a few days, and dressing the part afterwards with the tar ointment. It is always better to lay up the horse, and poultice him, than to put him immediately to work, as is commonly done, because the disease appears trifling: they are almost always obliged to do it at last, and then a much longer time is required for the cure. Treads have been noticed in this place because crown scab and rat tails are a mangy kind of complaint, and often occasion the accident. Horses that have this itching of the heels and legs, if carefully examined, will sometimes be found to have lice in the skin. The legs should be well rubbed with mange ointment, and some sulphur or alterative powder may be given them inwardly. I am inclined to believe that malt dust and grains contribute to this itching in the hind legs, if it is not the sole cause of it. If this food must be given, I think it would be rendered much more digestible and nutritious by being steeped or macerated in hot water, and made into a mash. I have seen it mixed with hot grains fresh from the

mash-tub with apparently good effect. In some cases lice have caused this itching, but they may be destroyed by mange ointment or tobacco-water. I have found the lotion and astringent ointment prescribed for cracks in the heels very useful in treads.

CHAPTER XXI.

STRANGLES.

This is a disorder of the throat, consisting of an inflammation of the tonsils, and terminating in an abscess under the jaws. It occurs to young horses between the third and fifth year. When it occurs at grass it goes through its course easily, and without pain or inconvenience to the animal, if it is not interfered with; so little indeed is the inconvenience it occasions to the animal in this situation, that it often escapes notice. When the strangles occurs at grass, and goes through its course without the interference of art, it accomplishes the purpose for which it was designed, that is, of invigorating the constitution; but when it occurs in the stable, it is often a severe complaint, and has sometimes occurred with such violence as to render bronchotomy necessary. Sometimes the swelling under the jaws proceeds to suppuration without difficulty, merely by poultice, or hot fomentation; but when there is soreness of the throat, and difficulty in swallowing, it is advisable to rub in some blistering liniment also. When

the swelling becomes quite soft, it shows that matter has been formed in it. Soon after this the swelling bursts, and the matter is discharged. It is generally necessary to enlarge the opening, that the matter may escape freely. I seldom wait for the bursting of the tumour, but when satisfied that suppuration has taken place, make an opening with a lancet and enlarge it sufficiently to introduce the finger, by which the extent of the cavity and the opening may then be as much further enlarged as may appear necessary. A tent of digestive ointment is then generally applied, but when a sufficient opening has been made, it soon gets well without any applications. In very severe cases, in which there is danger of the lungs becoming inflamed, I think it advisable to bleed freely. A cool stable is desirable, and the diet should consist chiefly of bran mashes.

CHAPTER XXII.

VIVES, OR IVES.

This disorder consists of a swelling of the parotid gland, which is situated immediately beneath the ear, and is commonly named the vives or ives. This is the largest of the salivary glands, and its excretory duct passes under the angle of the under jaw with the submaxillary artery, where the pulse is felt, and terminates between the second and third grinder of the upper jaw, where it may be easily

seen, and a probe passed into it. Fomentations of hot water should be first applied, that is, a large piece of thick woollen cloth should be wrung out of hot water, and kept in contact with the swelling. After continuing this operation for some time, the woollen cloth may be confined close to the part, by suitable bandages, until it is convenient to repeat the fomentation. Sometimes these swellings go on to suppuration, and burst; when this happens, the opening should be enlarged sufficiently to introduce the fore finger, and when the extent of the cavity has been thus ascertained, any further opening, should it appear necessary, may be made. A tent of digestive ointment is then to be applied, and repeated daily until the disease is cured. Sometimes these swellings continue hard, and I have known them prevent a horse from feeding. In a case of this kind, which I met with last spring, I completely relieved the horse in a short time, by rubbing in the following ointment:

Crystallized tartarized antimony,
very finely powdered .... 2 drams.
Olive oil .... 1 dram.
Hog's lard .... 1 ounce.
Mix.

The hair must be closely cut off from the swelling, and the ointment well rubbed in with the hand for about ten minutes. When horses have sore necks, and lose the jugular vein, which some-

times happens after bleeding, a hard swelling of the parotid gland takes place, which generally continues a considerable time. In such cases, the above ointment, after the disease in the neck has been cured, may be tried.

CHAPTER XXIII.

INFLAMMATION OF THE EYES—MOON BLINDNESS. —OPHTHALMIA.

THE horse's eye is more frequently diseased than that of any other animal, and its diseases often terminate in a partial or total loss of sight The peculiar liability of the horse to diseased eyes does not appear to be natural to the animal, but to depend entirely upon the violent exertions to which he is urged at an early age, before his frame has arrived at its full growth, and to the improper manner in which he is generally fed and kept, often standing in a close stable several days together without exercise, and then taken out with his bowels loaded with excrement, and ridden immoderately. When a horse is ridden hard in this state, that is, not only with loaded bowels, but with loaded blood-vessels also, is it to be wondered at that so delicate an organ as the eye should have its nervous structure irreparably weakened, or otherwise injured? Weakness in the nervous structure of the eye is certainly hereditary; and colts got by stallions that have diseased eyes seldom

escape the disorder; and when we consider that some colts are naturally of weaker constitutions than others, we can readily conceive that diseased eyes may be produced by slighter causes in such colts than in others. Prevention is the object to which we should look; for when once the disease has taken place, it is seldom perfectly and permanently cured. Before I enter any further into a consideration of the diseases of the eye, a brief description of its anatomical structure and economy will not, I trust, be thought superfluous.

The eye may be considered as an organ admirably adapted to the purpose of transmitting an image or picture of objects to the brain, and therefore composed of parts that are perfectly transparent, and of a form suited to the degree of refraction that is required; of a muscular structure, free from any impediments to an easy and rapid motion; and of a nervous structure, possessed of exquisite sensibility.

The first part that presents itself to our notice is the *cornea*, or glass of the eye, which, like the glass of a watch, is of a convex form, and perfectly transparent. Its convexity depends upon a fluid which it contains, named aqueous humour. If the cornea is punctured, the aqueous humour flows out, and the cornea falls down and becomes wrinkled and flat. This convexity of the cornea is necessary to the collection and refraction of light, and for adapting it to the various distances and situations of objects, which the animal has

occasion to look at: there are also for this purpose several muscles attached to the eye, which is imbedded in fat, in order to render its motion as easy as possible.

The eye-lids may be considered as a muscle covered with skin externally, and lined with a smooth vascular membrane named tunica conjunctiva, which covers also the sclerotic coat, or white of the eye, and thereby serves to attach the eye to the socket, being at the same time sufficiently loose to admit of that freedom of motion which is necessary. The perfect transparency of the cornea may be destroyed by blows, or sharp irritating bodies falling into the eye. The first effect of such accidents is inflammation, an increased secretion of tears, and closing of the eye-lids to exclude the light, on account of the pain it gives. After some time the inflammation subsides, and as the light occasions no pain the horse keeps open the eye as he did before the accident. But we generally find that the cornea, instead of being restored to perfect transparency, has become more or less opaque according to the degree of the injury that was inflicted. Sometimes the whole of it will have become of a whitish or smoke colour, at others only a small part of it will be thus changed. This is commonly called a *film;* and stimulating powders are blown into the eye for the purpose of removing it, which are often applied too early, or before the inflammation has perfectly subsided. They are also sometimes too strong; common salt

finely powdered is generally strong enough, but crude sal ammoniac, white vitriol, &c. are often employed.

The cornea often becomes inflamed from some internal cause, such as catching cold, standing in the stable, and feeding heartily for several days together without exercise, and from violent exertions or immoderate work at too early an age. This inflammation is of a serious nature, and generally affects the muscular and nervous structure of the eye, as well as the cornea and tunica conjunctiva. By employing proper means this inflammation generally abates in a few days, and after some time the cornea becomes transparent; but the nervous structure of the eye is left in a weak and irritable state, and the inflammation commonly returns after a few weeks or months, according to the manner in which the horse is kept. This serious kind of inflammation is almost always the result of the generally prevailing practice of breaking colts, and bringing them into work at too early an age, and takes place most frequently about the fifth, or from the third to the fifth, year.

The *cornea* is not the only part in which perfect transparency is required: there are two other humours, as they are termed, within the eye, named the *crystalline* and the *vitreous* humour.

But before we dismiss the cornea it is necessary to observe that any deviation from that degree of convexity which it naturally possesses will in some degree disturb vision. If, for example, the cornea

is too convex, the horse will be near-sighted, or will not be able to see distant objects distinctly. If it be too flat, he will be unable to see objects distinctly that are near to him. These defects are not frequent in the horse. If we cut away the cornea, all the aqueous humour escapes, and we come to the muscular part, named *iris.* This is a very delicate circular muscle, with an oblong opening named the pupil, in the centre, through which the crystalline humour presents itself to our notice. If we look at the eye before the cornea is opened, the pupil will appear of a dark blueish colour, and of an oblong form, with the long diameter in a horizontal direction. In the human eye the pupil is black, and of a circular form: it is commonly called the apple of the eye. In the living eye, or the eye just taken from the dead animal, the iris is floating in the aqueous humour, which enables it to move readily. It is composed of two orders of muscular fibres, the one arranged in a circular direction, which by contracting diminish the aperture in the iris or *pupil,* the other proceeding in straight lines, from their origin to the margin of the pupil, and therefore by contracting open or enlarge the pupil. When the eye is exposed to a strong light the circular fibres of the iris are stimulated to contraction, and the pupil becomes very small; when the light is moderated the circular fibres relax, and then the straight or radiated fibres are enabled to contract and open the pupil.

It will be found useful to recollect this descrip-

tion of the pupil, as it will enable the reader to detect imperfections in the horse's eye, which he would not perhaps otherwise discover. The colour of the pupil, or apple of the eye, depends upon the colour of the bottom of the eye, which in man is black; but in the horse, and some other quadrupeds, it is beautifully variegated, being a mixture of blue, green, and black; which, seen together through the pupil, appear of a dark blueish colour. Though the pupil is nothing more than an aperture in the centre of the iris, through which the bottom of the eye is seen, yet there is a transparent body placed there, which is named the crystalline humour. This transparent body is not fluid like the aqueous humour, but solid and in form a double convex lens; but more convex in its posterior surface than in the anterior. It is inclosed in a transparent capsule, which is not adherent to it; for when the capsule is opened with a lancet the crystalline humour comes readily out, and may be placed on a bit of paper for examination. I have before described how vision may be impeded or destroyed by a partial or total opacity of the cornea; it is the same with the crystalline humour, which often becomes opaque either partially or wholly. The opacity is sometimes so complete that though light is transmitted nothing can be seen: it is just like our looking through a pane of ground or rough glass, which enables us to see the light without distinguishing objects. Sometimes the opacity is not so considerable; but there ap-

pears only a little cloudiness in the pupil, and it is then generally rounder and more open than in the healthy eye. This slight opacity of the crystalline humour renders the sight a little indistinct, and such horses are therefore very liable to start. When the crystalline humour has become opaque the disease is termed a *cataract*, and is very conspicuous in the living horse; the pupil or apple of the eye being then of a yellowish white, or pearl colour; it is generally changed also in form, having become rounder and rather irregular. This subject is illustrated by plates, especially in plate 2, figure 2, and by a rough sketch annexed to this chapter. A partial opacity of the crystalline humour, or partial cataract, appears as a white speck or specks in the pupil, which may be distinguished without difficulty from specks on the cornea, by looking at the eye while the horse stands with his head towards the stable door, the door being open. This is the most favourable situation or light for examining the horse's eye. If the speck in the pupil is small, and close to the upper margin, the impediment to sight is inconsiderable; but if it is in the centre, or near the lower margin, it is a serious obstacle, and that in proportion to its size.

The objects most useful for a horse to view are those on the surface of the earth, where he finds his food, and those on a line parallel with himself, where he sees objects that he has occasion to ap-

proach or to avoid.* He possesses also, like the hare, a peculiar facility of viewing objects placed rather behind him; and likewise of throwing back his ears to collect sound which proceeds from behind, which enables him to hear and see the approach of his enemies, when in a state of nature; while his speed enables him to fly from them. His principal weapons of offence and defence are his heels. There is something remarkable in the eye of a vicious horse, and indeed the disposition may be known pretty nearly by the expression of the eye. But to return to our explanation of the structure and economy of the eye, which I shall endeavour to make useful in practice by enabling the reader to examine a horse's eyes so as to detect any imperfections there may be in them when he has occasion to purchase a horse.

When the crystalline humour has been taken out, in the manner before described, there will remain in the ball of the eye a great deal of beautifully transparent jelly, which is the third humour of the eye, and is named the *vitreous humour*. The second or crystalline humour is imbedded in this jelly; and in the operation for cataract, named *couching*, the opaque crystalline is pressed downwards into this vitreous humour so as to permit the

* There are black pendulous bodies suspended from the upper margin of the pupil, which must not be mistaken for a disease. These are natural to the eye, and of great use in excluding the direct light of the sun, or that reflected by the sky.

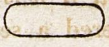
light to pass through the pupil to the bottom of the eye. Couching, however, in the horse's cataract, is never of any use; for as soon as the needle is withdrawn by which the opaque lens is pressed down, it rises again into its place and obstructs the passage of light as before. This, I believe, depends upon a circumstance that appears to be peculiar to the horse; that is, whenever the crystalline lens becomes totally opaque, the vitreous humour becomes disorganised and as fluid as water. The opaque crystalline being specifically lighter than this water, or nearly of the same specific gravity, arises again the moment the couching needle is withdrawn: were it otherwise—were it possible to displace the opaque crystalline, or extract it, as it is in the human eye, still no benefit would result from the operation; for the nervous structure of the eye is generally, perhaps always, disorganised as well as the vitreous humour. The capsule of the crystalline humour becomes opaque also, especially at the posterior part, where it is found thickened and adhering to the ciliary processes; at the anterior part it generally adheres more or less to the iris. Having described the *cornea*, the aqueous humour, the *iris*, with its aperture, named *pupil*, and the crystalline humour, the third or vitreous humour is now to be noticed. I have before observed, that when the crystalline humour becomes opaque or changed to a cataract, the vitreous humour is almost always found disorganised, and, instead of having the appearance of a beautifully transparent jelly, is as fluid a

water, and generally turbid, and as soon as an opening is made it runs out. In the healthy state the vitreous humour exceeds in quantity the other two humours, and completely fills the back part of the eye, or that part which is enclosed by the white coat of the eye, which in anatomy is named the *sclerotic* coat. Though the vitreous humour has the appearance of a soft transparent jelly, it is in reality nearly as fluid as water, and owes its appearance to the circumstance of its being contained in innumerable minute transparent cells, which are all enveloped in one transparent film; this makes it appear as a soft transparent jelly; but if this jelly be snipped with a pair of scissars, the little cells will be cut open, and a transparent liquid, like water, will drop from the jelly. I have observed that the crystalline humour is kept in its situation by a transparent capsule, and this capsule appears to be confined by what is named the ciliary ligament—a band of delicate circular fibres surrounding that part of the capsule which corresponds with the edge of the crystalline humour, or that circle where the two convex surfaces meet or are joined to each other. In my description of this humour, or crystalline lens, as it is also termed in the fifth edition of my third volume, I have considered it as two plano-convex bodies of unequal convexities joined together; and not only that, but I have likewise considered each section of the crystalline lens as consisting of a series of concavo-convex lenses accurately fitted to each other. As an illustration of this, let us suppose a large watch glass,

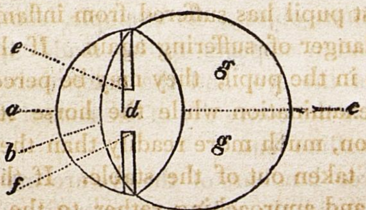
and put another into it which fits it exactly, and so on, until it is quite full; it would then be a plano-convex body, and if opposed to another series of glasses, like itself, it would then form a double convex lens, and may serve to illustrate my description. It will be seen that if the ciliary ligament, aided by the external muscles of the eye, has a power of compressing the crystalline lens, the effect would be that of increasing the convexity of both surfaces; and if we suppose the crystalline lens, or the concavo-convex lenses of which it is composed, to be elastic, then if the ciliary ligament ceases to compress, or is relaxed, the crystalline lens would resume its original state or degree of convexity. Whether we consider this to be effected by the ciliary ligament, or by the muscles exterior to the eye, is not material; but that it takes place, the following circumstance seems to prove: for when the crystalline humour has become a cataract, it will be found to have become globular. This change of form in the crystalline humour may take place in a slight degree in the healthy state, and may be one means of adapting the eye to the various distances of objects. In viewing minute objects, for example, some degree of compression appears to be made upon the humours of the eye, and the compressing power may increase the convexity of the cornea as well as of the crystalline lens.

The three humours of the eye are inclosed by the *cornea*, and the white or *sclerotic* coat; and

within the latter are two other coats, the first is named the *choroid* coat, and in the human eye is black, or of a very dark brown colour; but in the horse, and some other quadrupeds, is variegated with blue, green, and black. The *choroid* coat is very vascular, and appears almost as a plexus of vessels covered with colouring matter. The *choroid* coat is covered by the *retina*, which is an expansion of the optic nerve. It appears a delicate film, and in the living eye is perhaps transparent. The optic nerve of the horse is about the size of a crow-quill, and enters the white or sclerotic coat, not in the centre, as might be supposed, but considerably towards the inside; but though its situation is not central with respect to the sclerotic coat, it is so with respect to the axis of vision, and it is worthy of remark that the long diameter of the pupil, which is of the form annexed, always preserves its parallelism with the horizon, in whatever position the horse may hold his head. (See *Sketch of the Eye.*)



I have annexed to this article a diaphragm of the eye, and of the crystalline lens, which may be



found useful. *a*, the cornea; *b*, the anterior convexity of the crystalline humour; *c*, the posterior convexity of the crystalline humour; *d*, the pupil; *e*, the superior margin of the pupil, or iris, with a black substance that is always found attached to it; *f*, the inferior margin of the pupil, or iris; *g*, *g*, the white or sclerotic coat inclosing the vitreous humour and posterior part of the crystalline humour.

I must now conclude this subject with advising all those who are about to purchase a horse, and cannot have the assistance of a veterinary surgeon, to examine the eye carefully, for which purpose he should be placed, as I have before observed, with his head towards the stable door, but a little within, while the door is quite open. The cornea should be perfectly transparent; but a small faint whitish spot, if it is not in the centre, should not be considered a serious objection to the horse. Both eyes should be examined at the same time, while they are exposed to the same degree of light, in order to ascertain if the pupils of both are of the same size and form. If any inequality is observable, it is a bad sign, and shows that the eye with the smallest pupil has suffered from inflammation, and is in danger of suffering again. If there are any specks in the pupil, they may be perceived by a careful examination while the horse stands in this situation, much more readily than they would if he were taken out of the stable. If the pupils are large, and approaching rather to the circular

form, they are generally at the same time a little cloudy. Such horses are often in the habit of starting, from an indistinctness in the sight: such eyes, however, seldom become inflamed or alter quickly for the worse; but sometimes this cloudiness of the pupil degenerates into cataract. With regard to the partial cataract, or specks in the pupil, it has already been observed that they are not a material impediment to sight, if small, and at the upper margin of the pupil; but when they are in the centre, or lower down, and especially if they occupy much of the pupil, they injure the sight considerably. The partial cataract very rarely extends or becomes total, and I think it may generally be considered as an indication of the disposition or tendency to inflammation having ceased. They do not appear, however, like the total or complete cataract, to establish the health and strength of the other eye; but rather indicate that the other eye, though apparently free from disease, will at some future time become inflamed. In describing the iris, I should have observed that it is generally of a brown colour: but sometimes it is either wholly or in part white: this is commonly called a *wall eye*, and must not be considered as a disease; nor are such eyes either more or less liable to disease than others, though commonly supposed to be stronger or better than other eyes. A horse's eyes sometimes appear very small, and rather sunk in the sockets; if both eyes are alike, and the cornea appears transparent, they should not be

objected to. I am inclined to think that if there be any difference, such eyes are less liable to disease than others. The large staring eye is sometimes imperfect. The cornea is sometimes too convex, so as to render the horse rather near-sighted. This can only be discovered by riding him. There is a disease of the eye which does not often occur in horses, named amaurosis, or gutta serena; in which the cornea and crystalline humour are perfectly transparent; but the nervous structure of the eye has lost its power. It is not easily distinguished, unless it be by turning the horse loose into a place where his want of sight may be discovered by his running against objects.

With regard to that very common disease of the horse's eye which so frequently ends sooner or later in the partial or total loss of sight, it may be useful to observe that the success of our treatment will depend in great measure upon the early application of remedies. Bleeding and opening medicine are always proper, and a cooling or opening diet with regular exercise will be necessary afterwards. The best topical remedies are a seton under the eye, (See *Setons,*) and blistering the skin above the eye, that is, in the pit of the eye and above it, and a rowel under the jaws, taking care that the horse does not rub the blistered part and get the blister into the eye. The lotion mentioned at page 200 may be applied several times a-day by means of a very clean soft bit of sponge. The stable should be kept clean, as the exhalations

of foul litter are injurious. Many horses will eat a great deal more hay than is proper, if they are permitted to do so; and this tends to load the stomach, to vitiate the appetite, and the digestive function: hence arise what is commonly called humours, or an impoverished state of the blood, which is injurious to the nervous system, while the great quantity of excrement with which the bowels are constantly loaded tends to throw blood to the vessels of the head, and keeps up the inflammation of the eye. Attention to diet, therefore, is of great importance in the treatment of inflamed eyes; and the same attention is always necessary to prevent a return of the disorder. It is, I am inclined to believe, entirely from want of this attention that inflamed eyes, or ophthalmia as it is termed, so frequently ends in a partial or total loss of sight. The disease often appears to go off, or shifts from one eye to the other. Sometimes a horse will remain apparently free from it for weeks, or even months: I say *apparently* free from the complaint, because, if a person will attend carefully to the directions I have given for examining a horse's eyes, he will be sure to find some defect in the eyes of a horse that hashad an attack of ophthalmia; that is, of inflammation from an internal cause. As to the inflammation arising from blows, or other external injuries, they are seldom of importance unless the injury is severe, such as a wound penetrating through the cornea; but in all such cases it is the safest plan to adopt precisely the same

mode of treatment I have advised for ophthalmia. I have already pointed out what I believe to be the cause of the peculiar frequency and obstinacy of this disorder in the horse, which is really a serious evil; and beg leave once more to remind the reader how advantageous it will be found to allow horses to acquire their full growth and power before they are taken into work, and to bring them as gradually as possible to the habit of living in a stable on dry food. They will find it equally advantageous after this period to work them with moderation, and purchase the best hay and oats for them; for at whatever price they may be sold, such will always be found the cheapest. So generally are horses which labour under ophthalmia, in an unhealthy state, that after the operation of the opening medicine I always prescribe the following alterative:

Alterative Powder.

Take of Ethiop's mineral, and *levigated*, or prepared antimony, of each 3 oz.; mix, and divide into 12 papers: give one every morning and evening in the horse's food.

The best food is grass or vetches; when that cannot be had, bran and a very moderate quantity of the best hay. It is generally thought improper to turn a horse to grass that has inflamed eyes, and I believe it is so; for I have seen horses with good eyes stung almost blind for a time by the flies while at grass; this blindness, however, is soon cured by bathing the eyes with

the following lotion, and taking the animal up for a short time. Train oil, with a little tar dissolved in it, or the oil of tar, will be found a good thing to keep off the flies. But though it may be improper to turn a horse to grass while labouring under ophthalmia, a long run at grass is certainly a very likely method of preventing a return of the disorder.

Eye Lotion.

Take of sulphate of zinc	2	dr
Super-acetate of lead	$2\frac{1}{2}$	dr.
Water	1	pint.

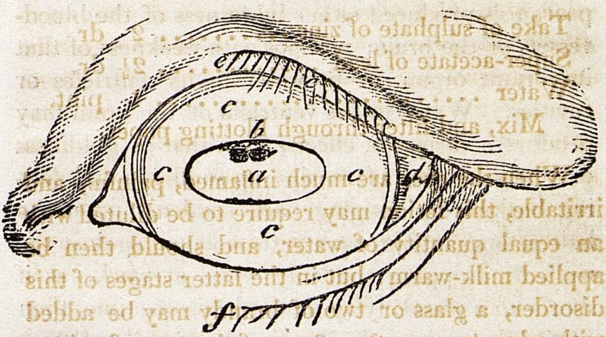
Mix, and filter through blotting paper.

When the eyes are much inflamed, painful, and irritable, this lotion may require to be diluted with an equal quantity of water, and should then be applied milk-warm: but in the latter stages of this disorder, a glass or two of brandy may be added with advantage, or 2 or 3 oz. of tincture of opium.

I forgot to observe, in speaking of the opacity of the cornea and crystalline humour, that when the inflammation of the eye is considerable, there is often a loss of transparency in the aqueous humour also. This appears to be occasioned by the formation of matter of a yellow colour within the eye, which generally occupies the lower part of the anterior chamber, as it is termed; that is the space filled by the aqueous humour. In this case the cornea is often not only partially opaque, but of a reddish colour. The tunica conjunctiva,

or membrane lining the eye-lids, is also very red, and many small blood-vessels are seen on the white or sclerotic coat of the eye. This state of the eye requires bleeding, although that operation may have been performed a short time before. I have in some cases repeated the bleeding several times with manifest advantage.

Sketch of the Eye.



a, the pupil; *c*, *c*, *c*, *c*, the iris; *d*, the haw, or winking membrane; *b*, the black pendulous bodies attached to the upper margin of the pupil. (See *Plate*.) *e*, the upper eye-lash; *f*, some hairs, or a small under eye-lash.

In this sketch the pupil is large, as it appears when the eye is placed in an obscure light. In the coloured plate the pupil has been improperly drawn a little oblique in its direction.

CHAPTER XXIV.

HYDROCEPHALUS.—DROPSY OF THE BRAIN.—CONVULSIONS.—EPILEPSY.—FALLING SICKNESS.—MEGRIMS.—VERTIGO.

THESE various names arise from the various appearances produced either by fulness of the blood-vessels of the brain, perhaps with weakness of that important organ, or by water in its ventricles or cavities. Water in the ventricle of the brain may produce a variety of effects, from that of giddiness or vertigo to that of rearing up suddenly and falling backwards, hanging back suddenly upon the halter, and falling back with violence against the wall, or dropping suddenly while at work, as if shot with a pistol, lying motionless some time, then getting up again and appearing quite well. Sometimes when ridden hard the animal tries to stop suddenly, rambles or staggers, appears confused and lost, and often falls down. Blindness in one eye is a common symptom of this disorder, and always in the eye opposite to the affected ventricle. Horses with this complaint, when their stomachs are loaded, and their bowels full of excrement, by eating immoderately of hay, have the symptoms much increased, and not unfrequently are attacked with mad staggers from this cause, or, what is not less frequent, the stomach staggers; for when the

stomach has been much distended with hay, and the practice is continued, the organ itself at length becomes paralysed, which is what may properly be named stomach staggers. Dropsy of the brain sometimes assumes a violent form, producing epileptic fits. The horse falls down, and sometimes remains motionless, at others he struggles violently, and after a time gets up again and becomes violently delirious. Copious bleeding often affords relief for a time, but the disorder sooner or later terminates fatally. Water in the ventricle of the brain, for frequently it is one only that is affected, is incurable, as I have observed in the third volume, where this subject has been treated of rather physiologically than practically; here I have to consider how this disorder, as it cannot be cured, is to be alleviated. When a horse is attacked with symptoms which come under the name of megrims, giddiness, or vertigo, it indicates either the existence of water in the ventricle of the brain, or an accumulation of blood in the vessels of the brain. A slight degree of hydrocephalus, or rather a small quantity of water in the ventricle, may exist without producing any visible effect upon the horse; but if he is ridden hard, if his stomach and bowels are loaded, or if by high feeding and want of regular exercise he becomes plethoric or too full of blood, the disorder will then be aggravated, and the symptoms I have described will be produced. From this view of the subject, it will appear that hydrocephalus may be

relieved by avoiding those circumstances by which it may be aggravated and heightened into a visible disorder; and if that disorder does take place in any degree whatever, bleed according to the urgency of the case, and unload the stomach and bowels by physic and clysters. Green food is the best diet for such horses, and if that cannot be had, bran mashes. Very little hay should be allowed. Hanging down the head at grass may favour the accumulation of blood in the vessels of the brain; when this seems to be the case, the horse should be kept loose in a cool box. I have known distension of the stomach and bowels alone produce a serious attack of vertigo or megrims, in such a degree indeed that the horse rambled and fell down while the owner was riding him. This horse, from being fed moderately and having his bowels emptied with a dose of physic, never had a return of the disorder, and lived many years afterwards.

Anasarca, or General Dropsy.

This disorder in the horse is of two kinds; one depending on general debility, and the other on a high degree of inflammation. The former most commonly occurs in old horses when turned out into poor pasture, particularly in cold marshy situations. It is known by considerable swellings of the belly, chest, and hind legs, attended with great debility; of this they generally die, unless relieved by a strong diuretic, sudorific, and cordial: these

are combined in the celebrated old drench of Markham, which has cured more horses of this disorder than any other remedy, and is considered in the low country, about Glastonbury and Wedmoor, where this disease is prevalent, an invaluable medicine; so much so, that I was informed by Mr. Poole, a respectable practitioner of that country, that it was quite a specific for dropsy, and never failed of giving relief. It consists of a decoction of wormwood in a gallon of ale, which is boiled down to two quarts, and skimmed. In this 1 oz. of Castile soap is to be dissolved, and then there is to be stirred in 6 drams of grains of paradise, powdered, and the same quantity of long pepper. The whole of this mixture is to be given at once, fasting. The horse is to be clothed and rode about until he sweats and stales profusely, which he soon does, and is then relieved. The horse is often capable of doing some work after his recovery; but the constitution of such horses is generally too far broken down to receive any permanent benefit from this or any other treatment. Some people may be apprehensive of danger in using this herculean remedy: in that case the cordial diuretics, prescribed in the chapter on broken wind, may be given, so as to make the horse stale considerably; and the best cordial in such cases, should an additional one be required, is half a pint of ale twice or three times a day. The other kind of dropsy, or that which depends on a high degree of general inflammation, most com-

monly attacks colts during the first, second, or third year, or before they begin to change their grinding teeth. At this period there is less blood formed, not only from the state of the grinding teeth, the gums, and the mouth in general, which is such as to render mastication painful, difficult, and imperfect, but from the stomach participating in, or sympathizing with, this state of the mouth. This disorder in young colts is first observed by dulness, disinclination to motion, hanging the head, and indifference in grazing. There are swellings also on the belly, chest, sheath, or udder, which are sometimes very considerable. When these symptoms are observed, the colt should be taken up and bled until he is quite faint, or drops down from faintness. It matters not what quantity is taken, it should not be measured, as faintness is the only criterion for knowing when enough has been taken off. When the faintness goes off, if the colt is not materially relieved, he should be bled again. Nothing more is necessary, unless it is turning him into a place where he can have but little food and sufficient exercise. I have been assured by a respectable farrier, that he has given Markham's drench to colts when affected with the Moor ill, as the disorder is termed, and almost invariably with success. In the last case, I heard of the colt being so ill, that he was unable to rise; but when he had taken the drench, he broke out into a profuse perspiration, and soon after got up, and perfectly recovered.

CHAPTER XXV.

DISEASES OF THE MOUTH.

Lampas.

This disease consists in a swelling of the roof of the mouth, near the front teeth, aud is sometimes higher than the teeth. It happens generally between the third and fifth year, and is supposed to prevent a colt from gathering his food with ease, so that on that account he falls off in feeding, and consequently in flesh or condition. The usual remedy is to scoop out the part next the teeth, with a red hot iron, formed for the purpose, or sear it with a flat piece of iron made hot. These remedies are still generally practised, even in the army; nor is it possible, I believe, for veterinary surgeons to prevent its being done. The lampas, however, is not the cause of the colt's ceasing to feed well, and falling off in flesh, it depends upon his cutting the grinding teeth at this time; and if, instead of burning out the lampas, as they term it, they would keep him entirely on bran mashes for about a week, he would be able to eat his hay and corn with avidity: for the stomach which always sympathizes with the mouth in the painful periods of dentition, is quickly restored when the power of mastication returns. Nothing more is necessary for curing the lampas, and I

hope burning it will for the future be discontinued. Should the practitioner, however, be required to do something, the lampas may be rubbed with common salt.

Sore Mouth.

During the time that horses are breaking, they are often hurt in the mouth by the pressure of the bit: especially in that part where it bears when they are put upon the bit, as it is termed; that is, when their noses are reined in towards the chest. The bit then bears on the under jaw between the tush and the first grinder. The bone in this part being thinly covered with gum, is often bruised and inflamed; and being neglected, or rather the pressure being still continued, it becomes carious, and a troublesome sore or sinus is the consequence. This sore, in feeding, becomes filled with masticated hay, which being discovered is supposed to be the cause of the sore, and as common hay cannot be supposed to be capable of such an effect, it is attributed to what the grooms term squirrel-tail grass, that is, wild barley. This severe bitting, though not always necessary, is the most effectual method of subduing the temper of a stubborn horse that can be adopted. It will more effectually cure restiveness than any punishment that can be devised, and if properly conducted will make a mouth, or rather a temper, whatever the rider wishes it to be. For what is called softening or

making the mouth, is in fact softening or making the temper. There is great danger, however, of attempting to make the mouth at the time of riding, by means of a running rein; for if he is a stubborn or run-away horse, there is great danger of throwing him down, and in the most dangerous manner that can be. For, if he is determined to run away, and the rider endeavours to prevent him by a running rein, in drawing his nose down to his chest he so restrains the muscles of the shoulder, that he must of necessity pull him down topsy turvey. Since the body being propelled by the muscles of the hind parts, the restraint thus imposed upon the extensor muscles of the fore leg, prevents their being thrown to the extent required, and he comes down with the most dangerous violence. I have known this accident happen with horses that have had upright shoulders and very well-formed hind parts; I have also known very safe horses that have contracted a habit of going with their noses poked out, become very unsafe and soon get broken knees by endeavouring to improve their carriage by a martingale or running rein. When this injury is observed in the mouth, the horse should be kept on bran mashes, and if the bone is not injured the sore may be dressed with a little alum, honey and water. Most commonly, however, when the sore is carefully examined with a probe, the bare bone may be distinctly felt, some openings also may sometimes be felt in the bone. In either case the diseased bone—

for when bare it is always diseased, must be exposed completely, and freely scraped with a rougine or drawing knife. It should then be dressed daily with tincture of myrrh, which will soon effect a cure. Another disease occurring from the pressure of the bit, is named bags or washes; this is a thickening or swelling just within the corners of the lips, and is often produced by gagging or making the bearing rein too tight. Sometimes these are so large as to require to be removed with a knife. Sometimes during dentition or teething, the whole mouth becomes inflamed and sore, and this state generally extends to the stomach, causing loss of appetite. In such cases the excretory ducts of the sublingual glands being rather swollen, have been mistaken for a disease, and cut off. The only thing necessary in such cases is to keep the horse on bran mashes a short time. No medicine is necessary, and bleeding is rendered unnecessary by the loss of appetite.

In giving balls improperly the under part of the tongue is often lacerated, which renders feeding painful and makes the horse slaver and froth at the mouth. This may be cured by a solution of alum, which should be thrown in with a syringe. We sometimes find the first grinder so unequally worn, as to leave one part much longer than the rest. This often proves an impediment to mastication, and should be struck off with a blunt chisel, and afterwards filed smooth. This was formerly termed the wolf's tooth; but the wolf's tooth of the present

time, which is still foolishly supposed to be a cause of ophthalmia or inflamed eyes, si a denticule or very small tooth, which sometimes appears close to the first grinder. This of course does no harm, and should therefore never be removed. In saying this, perhaps I may be doing an injury to many honest farriers, who are commonly paid a shilling or a quart of beer for performing the operation.

In speaking of digestion, I noticed a very common impediment to mastication, that is, the upper grinders being worn down on the inside close to the gums, and the outside becoming keen edges, by which the cheeks are wounded in mastication, and the oats or great portion of them swallowed without being chewed. This sometimes is so serious an evil, that the horse becomes incapable even of swallowing his hay, as I have described in the chapter on digestion. When corn is swallowed unchewed it is indigestible, affords no nutriment, and is often a cause of indigestion and flatulent colic. It is always voided with the dung, and when this is observed, some defect in mastication may always be suspected. In very bad cases of this kind, the horse, after chewing his hay a considerable time, throws it out into the manger in balls like chewed tobacco. Such horses are termed quidders, and often pine away, and are literally starved to death. There is a file sold by Veterinary instrument-makers for taking down the keen edges of the grinders, which does a great deal of

good, and should be kept in all stables where there are many horses. I have met with cases of injury of the tongue, in some of which great part of that organ has been cut off, and in others where it became necessary to do so, as it had been nearly severed by a cruel expedient, sometimes practised by jockies to prevent a horse from running away or bolting on the turf; that is, tying a cord round the middle of the tongue as tight as they can draw it; but it most commonly happens from a horse hanging back when the halter is placed in his mouth over the tongue. Horses are sometimes unable to swallow, not only from inflammation and soreness of the throat, but merely from a partial or total paralysis of the muscles of deglutition. In this case all the masticated food is thrown out in the manger or returned by the nostrils, and so is the water he attempts to drink, if the palsy is complete. Most commonly, however, it is not total or complete; he is able to swallow a little, and is gradually starved to death. Filing the grinders should always be tried in such cases. I have known balls stick in the œsophagus or gullet, and so low down in the passage as to be out of sight and not suspected. I have known three horses destroyed in this way. In two of them the ball was wrapped in brown paper, and in one the ball was as hard as stone, and had destroyed the internal membrane of the œsophagus. These cases prove the necessity of giving balls when recently made, and not too hard or large, and wrapped in

thin whity-brown paper. Horses sometimes, when feeding on very dry oats mixed with bran, will have their throats so irritated as to cough, in doing which a small portion of the food, during the violent inspiration that is made, may get into the larynx and stick in the rima or chink of the glottis, and cause the most dreadful irritation, and in a short time suffocation, unless the small portion of food (perhaps, a single oat, or one particle of bran,) which occasions it, is removed. When this happens, an opening is to be made in the windpipe, and a surgeon's probang passed up through the chink and quickly withdrawn. After the operation, one stitch should be put in the skin and nothing more done. I have performed the operation in such a case with success.

CHAPTER XXVI.

GENERAL OBSERVATIONS ON STRAINS.

Strains may occur in muscles, in ligaments, and in the membranes by which tendons are joined together. In whatever part they may occur, or whatever be the structure that is affected, the essential remedies are the same; which are, one copious bleeding and rest; that is putting the horse loose into a box. Bleeding is seldom thought necessary in strains, even when they are considerable; but when we consider that they are always followed by

more or less inflammation in the injured part, and that the swelling which follows is caused by the inflammation; it must be obvious that bleeding will materially conduce to the cure, and that without rest it will avail nothing. The common opinion that strains consist in the elongation or overstretching, and relaxation of a part, has led to the employment of stimulating and astringent liquids, which often do a great deal of mischief, but may have done good in cases where the injury has been deeply seated. In strains of the back sinews, where perfect rest is at first an essential part of the treatment, such applications make the horse uneasy and restless, so that he is frequently moving himself about and pawing the litter, which often entirely defeats the object we have in view. I have seen a constant application of cold saturnine lotion do good, also fomentations of warm vinegar diluted, and wrapping the limb with wet bandage; but upon the whole I think the emollient poultice is most effectual, when properly applied. By early attention to strains, and treating them in the manner I have advised, we often remove the lameness and restore the injured part without having recourse to those painful remedies which are so often employed, and sometimes ineffectually. The horse's diet should be cooling and opening; but when these cannot be had, bran mashes should be given. A horse should never be put to work as soon as the lameness appears to be removed; it would in that case be liable to return, and prove

more obstinate than at first. When strains have been neglected or treated improperly, blistering or firing, and a winter's run, are often the only remedies likely to succeed. Lameness in the coffin joint often proves incurable, probably from a want of rest immediately after the occurrence of the lameness. I am inclined to think that bleeding freely in the toe in such cases, to the extent of a gallon at least, would be preferable to bleeding from the neck, and that longer rest is necessary than horses are commonly allowed. After the poultice is left off, the sole of the foot should be pared very thin and kept cool by stopping. The hoof may be kept cool by wrapping several folds of old woollen cloth round the coronet, and keeping it constantly wet. In very severe injuries of the hind fetlock joint, I have seen a perfect cure accomplished by applying a strengthening plaister or charge after firing; that is, after the inflammation produced by the operation had subsided. The horse was then turned to grass, and kept out until the charge had dropped off. Lameness in the hip is often difficult of cure, or incurable; I lately succeeded in two cases of this kind; one of them was evidently occasioned by a blow on the great process of the thigh bone, or round bone, as it is commonly termed, from its being mistaken for the joint, (see Frontispiece to the author's Veterinary Dictionary,) for there was an enlargement of this part. The remedies employed were firing and rest. This horse had been lame for some time, and

worked in that state; bleeding and purging therefore were not thought necessary. In the other case there was no external mark or swelling, but the seat of lameness was distinguished by the manner of the horse's going. This was a case of some standing, and had resisted the usual remedies, I therefore fired and blistered the part, and put a patten shoe on the other foot, which perfectly cured the lameness,

Since the last edition of this volume was published, I have been frequently employed in dissecting the limbs of horses, and have ascertained that those tumours, named Windgalls, &c. are really distended bursæ mucosæ. I have not met with any Veterinary book in which the bursæ have been fully and clearly described. According to Boardman professor Coleman has given the following account of them. "These bags contain a large quantity of fluid similar to the oil of the joints, and are placed between tendons, and between bones and tendons. Near the large joint of the hock, immediately above the fetlock, and between the back sinews, there are large bags of the same nature. The mucous bags near the hock *generally* communicate with the joint. The use of these bags is to prevent friction. Instead of the hard surface of one tendon, moving in contact with bone, or touching another tendon, these bags of oil being placed between solid bodies, diminish friction." According to Percival, "the bursæ mucosæ are small membranous sacs containing fluid, interposed between certain parts moveable

upon each other. They may be considered as appendages to muscles, or rather their tendons; for it is between tendons and the parts over which they pass, that we *commonly* find them: hence, they exist in great numbers in the extremities, either between the tendons themselves, or between the flexor tendons of the legs, or between the tendons and their thecæ. These bursæ are formed of thin tendinous sacs, lined by a delicate membrane, similar in its texture to the synovial membrane of a joint, which like it, secretes and contains a viscid fluid, resembling in appearance the white of an egg. They are connected to the surrounding parts by cellular membranes, so that, as they are circumscribed, they may, by a nice dissection, be wholly detached, and indeed, they are occasionally, by operation, excised altogether in consequence of being diseased." This description of the bursæ mucosæ appears to me to have been taken from other books, for it certainly cannot be the result of an actual examination of those parts in the horse. Let any one, conversant with veterinary anatomy, examine the great synovial cavity at the point of the shoulder; let him cut down upon the great tendon of the biceps muscle (or flexor radialis) and make a sufficient opening to introduce his finger; he will then feel the tendon upon the great grooved process, at the head of the humerus or shoulder-bone, which like the head of the bone that is articulated with the scapula, is covered with a smooth cartilage; let him pass his

finger upward and downward, and he will find that there are membranes which form a boundary to the cavity, and by which the synovial fluid is confined; he may now make a sufficient opening to see the parts, and he will then find that there is no sac filled with synovia, interposed between the tendon and the great grooved process of the humerus; he will find the tendon smooth and slippery, perfectly free from membrane lodged in the great grooved process, with a concavity in its centre corresponding with the convexity in the centre of the grooved process; so that the tendon passes through the synovial cavity or sac, instead of the latter being interposed between the tendon and the surface upon which it moves. The same thing may be observed at the back part of the fetlock joint, where the perforans tendon passes over the sesamoid bones: he will not find a mucous sac interposed between them; let him make a sufficient opening to introduce his finger, and he will feel the tendon in contact with the sesamoids, or rather the smooth slippery cartilage with which they are covered; he will find, also, by passing his finger, or a probe, upwards and downwards, that the cavity, like the former, is bounded by membranes which not only confine the synovia, but, probably, secrete it also. The back part of the head of the small pastern, covered with a smooth cartilage, affords the next slippery surface for the tendon to move upon, and the navicula, or nut bone, forms another. There is a large synovial

cavity on the back part of the fore leg, extending from behind the knee to about the middle of the fore leg. When the membranes which form the lower boundary of this cavity are ruptured, it is called a strain of the back sinews. I am of opinion that almost all strains consist in an injury of these membranes. Of this kind are curbs, bog spavins, thorough-pins and windgalls.

Shoulder Strain.

This accident is frequently occurring, especially in galloping on heavy ground, or where there are deep and numerous ruts intersecting each other. Sometimes it is so slight as to escape notice, until by galloping the horse again it is made worse; at others, it is so considerable that the horse is scarcely able to move, but drags his toe upon the ground, and in attempting to move forward he inclines his head and neck, and throws his weight on the sound side in such a way that he appears to move the affected leg in a circular direction. In whatever degree this strain may occur, the only remedies are bleeding, rest in a loose box, and putting a seton or rowel in the chest. If it does not go off in a week, blister the shoulder or chest, or rub some strong embrocation into it, such as sweet oil, hartshorn, oil-of-turpentine, &c. If the lameness does not go off in a month, the horse should have walking exercise or be turned to grass, and if

he does not soon get better he should be taken into a river, and made to swim for some time. In this way he exercises the muscles of the shoulder in a degree equal to that of trotting, while at the same time there is no weight thrown upon them. When the lameness is removed he should be brought into work gradually.

There is one kind of shoulder lameness which has not been hitherto described. It depends on an injury of the great synovial cavity, or bursa mucosa, through which that great tendon passes, which arises from a protuberance on the lower part of the shoulder blade, and slides over the large grooved process at the head of the shoulder bone. This large grooved process is covered with a slippery cartilage, as in other synovial cavities, to prevent any friction while the limb is in motion. I have seen shoulder lameness that appeared to depend upon a rheumatic affection of this part. The manner of the horse's going, when this part is the seat of lameness, is very remarkable. In endeavouring to trot, and sometimes even in walking, the fore leg suddenly gives way or bends, and it is only by a considerable effort that the horse can save himself from falling. I had a filly under my care for this lameness which fell down several times in walking. The remedies I employed were, passing a seton over the point of the shoulder, and blistering all around it pretty freely. This, and confining her some weeks in a box, effected a cure.

Strain in the Back Sinews.

This is a common accident, and occurs in various degrees. The symptoms are swelling, heat and tenderness, and a proportionate degree of lameness. Bleeding and rest are here also the essential remedies; but in addition to these, the whole leg, from the hoof to the knee, should be wrapped up in an emollient poultice. A large worsted stocking or long flannel bag is most fit for this purpose. It should be renewed twice in twenty-four hours. The poultice should extend above the knee, and be kept up by means of strong tape passed over the shoulder, as it is essential in this case to prevent motion in the knee as much as possible.

Strains of the Fetlock Joint.

This strain is known by heat, tenderness, and swelling of the fetlock joint, in a degree proportionate to the lameness. The swelling that takes place is rather at the side and a little above the joint, or where windgalls happen. The same remedies are applicable here; which are one copious bleeding, an emollient poultice, and rest. The horse in this and the preceding accident should be turned into a loose box, where he may move himself a little; but in very severe cases perhaps this should not be done until a week after the occurrence of the accident, and three weeks after that, he should be turned into a paddock or or-

chard, or have a little walking exercise. In severe strains either of the back sinews or fetlock joint, after the symptoms have been completely subdued, firing is an excellent remedy, and often necessary to prevent a recurrence of the accident. A long run at grass should afterwards be allowed.

Strain of the Coffin Joint.

This is a strain that does more mischief than any other, and entirely from the circumstance of its producing scarcely any lameness in the walk. A horse therefore when strained in the coffin joint, having no lameness or scarcely any in the walk, he is generally put to work, or what is nearly as bad, is turned to grass, without any regard to the situation, where he is often liable to be driven about. If, instead of this, it was treated like other strains whose symptoms are more apparent, and which produce a greater degree of lameness, there can be no doubt that it would soon get well, and with greater certainty perhaps than a strain in the back sinews. But as it is, a strain in the coffin joint is the most intractable kind of lameness we meet with, because it is always neglected at its first occurrence. I hope this remark will serve as a caution in future, and induce the proprietors of horses to pay attention to the slightest degree of lameness as soon as it is observed, and turn the horse into a loose box or keep him at rest.

If no swelling, heat, or tenderness can be discovered in any part of the limb, there is reason to suspect an injury of the coffin joint, for injuries or strains in this joint are often so obscure, that the only symptom is a very little increase of heat about the part, and lameness in trotting only; for in the walk the coffin joint is scarcely moved at all. In all those obscure lamenesses, then, the most safe plan is to bleed the horse freely, give him a dose of physic, and wrap the foot, pastern, and fetlock joint up in a large emollient poultice. This should be continued for several days. And should the lameness be occasioned by an injury of the shoulder, then rest and bleeding are the best remedy. Should it be the fetlock joint or pastern, it is the best treatment that can be adopted; and if it is in the coffin joint it is likely to cure the horse radically, instead of his becoming lame incurably, as he otherwise would. The poultice should be continued a week, and the horse suffered to rest about three weeks after; he may then be put into a paddock or orchard. Blisters may thus be rendered unnecessary.

Strain or Injury of the Loins.

This injury is not unfrequent, and occurs chiefly to draught horses, especially those in the shafts when they are keeping back heavy burdens in going down hill. In doing this they often slip, and not only strain the muscles of the loins, but

may injure the spinal marrow also, and even dislocate what is termed the pelvis, from the transverse processes of the sacrum, to which it is attached by strong ligaments, some of which must be ruptured to admit of this dislocation. These accidents are productive of very severe lameness; so much so, that the horse is often incapable of standing without support, or being slung. In this state he may continue a considerable time, and then the lameness gradually diminishes, and he becomes able to walk about without pain; but there is a peculiar appearance in his hind parts while he is moving, and a sort of lateral motion; he appears as if his back-bone were broken. The horse is then said to be *chinked*, and is considered of little value, being fit only for very moderate work. The accident may occur in a less degree than I have described, but the remedy is in all cases the same. That is, copious bleeding, perfect rest, suspension or slinging, if the lameness is such as to require it, and covering the loins with a fresh sheep's skin, blistering, or rubbing some strong embrocation upon them. After this treatment has been continued about a week, the horse should be put into a loose box where he can move himself about freely, and in a week after this he should have a *charge* put upon his back and be turned to grass. After two or three months he may be put to any suitable work: for a perfect recovery seldom happens.

Strain or Injury of the Hip Joint, Round Bone, Whirl Bone, or Hurdle Bone.

This is not so unfrequent an accident as it is supposed to be, and is produced by the hind feet slipping sideways, or by blows on the part, as in falls on the side. In the first case, that is in slipping sideways, the round ligament of the hip-joint is injured or torn. In falling on the part the injury is of a different nature: the cup of the joint or head of the bone may be injured. But a more common effect is a gradual enlargement of the great process of the head of the femur, by which the muscle named gluteus magnus (of the horse, but parvus of the human body), which passes over it, is thrown off a little, and therefore when in action, it forces the head of the femur into the acetabulum in such a manner as to render motion painful. This happens in some cases in such a degree as to produce inflammation, and very serious lameness. Lameness in the hip-joint may be easily distinguished by the horse inclining his hind parts a little on one side, so as to make one hip appear while he is going a little higher than the other; but after he has travelled some miles, he becomes a little tired of bearing so much on the sound side, and puts up with the pain of bearing on the lame side, so that he steps or goes equally, and the lameness is no longer observed, until he has stopped a short time or rested in the stable; and then, when taken from the stable, he is as lame

or lamer than before. Rest alone at the commencement of the lameness will often effect a cure; after this period firing and blistering are also necessary. This lameness is easily distinguished from lameness of the hock, or fetlock joint, by the sudden catching up of the hind leg in the two latter. Shoulder lameness also may be distinguished by the horse inclining his fore parts a little on one side, which makes the fore leg in going move in a curvilinear direction. In lameness of the lower parts of the fore leg, he drops his head a little and steps hard upon the sound side, appearing to dwell longer on the ground on the sound side.

Strain, or Injury, of the Stifle.

Lameness in the stifle is known by the difficulty the horse feels in putting forward the hind leg, also by swelling and tenderness of the part. Bleeding, blistering, and rest are the best remedies. Should these fail, the blister may be repeated. There is another kind of lameness in the stifle which is only of a temporary nature, and has more the appearance of spasm or cramp of the muscles; but occasions a temporary and partial dislocation of the patella. It takes place when a horse is suddenly moved in the stall, or when first taken out, or when first moved after having been ridden and then standing still a short time. The attack seldom lasts more than a minute or two,

but is often recurring. It occurs chiefly in colts, or young horses, and generally in those that cut in going, or have incipient spavins. When a horse is attacked with this cramp, as it appears to be, he continues with the hind leg stretched out, stiff, and apparently in great pain; he then suddenly draws it up with a jerk, and the knee pan or patella can be heard to go into its place again. This accident is occasioned by an unequal, or rather a discordant action of the muscles named vasti, frequently brought on by the horse endeavouring to ease the fetlock joint, and avoid cutting himself with the opposite foot, or to ease the inside of the hock when a spavin is forming, or it may be brought on by the common practice of turning up the outside heel of the shoe too high, and leaving the inner heel quite flat. If the cause is discovered it must of course be removed, if not, the horse should be turned to grass for a short time, and if a run cannot be otherwise obtained for him, the part may be blistered.

Strain, or Injuries of the Hock Joint.

This is a most important joint, and one that is more exercised than any other joint in the body: that is, the surface of motion between its two large bones is much greater than between any other bones of the body. In speaking of injuries of the hock, in the third volume, the structure of the

part is particularly described; therefore, if the reader is desirous of knowing it, that book may be consulted. It is sufficient here to observe, that the diseases which occur in it, are the bone, the bog, and the blood spavin, and thorough-pins.

Bone Spavin.

Bone spavin may sometimes be occasioned by turning up the outside heel of the hind shoe and leaving the other quite plain. The situation of this disease is shown in plate 3, fig. 2, 2. It consists of a small bony enlargement on the inside of the hock, which often is not very observable. It occasions, however, a peculiar kind of lameness, which cannot well be mistaken, that is, a quick catching up of the leg, especially in trotting. This lameness is of course in various degrees, and sometimes scarcely observable except on first starting, and sometimes in confirmed and bad spavins; the lameness diminishes, and sometimes appears to go off by exercise, but after resting for some time the horse becomes very stiff and lame. The only remedy for this complaint is firing, and blistering immediately after. The horse should then be turned into a box for a short time, and afterwards to grass; in about a month he may be put to work. I have been informed that introducing a seton over the diseased part of the hock is now practised at the Veterinary College, in preference to

firing. I have never tried this remedy, except in the case mentioned in a following article, (see *Splents*, page 232,) nor do I intend to do so, being satisfied that firing is the best, and indeed the only remedy where the disease is curable. The hot iron should be carried through the skin immediately over, and a little way into, the bony excrescence.

Bog Spavin and Thorough Pin.

This is a swelling on the inside of the hock, rather towards the fore part: the large vein which is so conspicuous on the inside of the leg passing over it. It depends either upon a distension, or rupture of the membranes which form the synovial cavity, or bursa mucosa, through which the great flexor tendon passes. The swelling is soft and yielding to the pressure of the finger, but rises again as soon as the pressure is removed. Sometimes, however, there is a swelling on the outside of the hock also, and in that case the fluid or synovia which the swelling contains, may be forced from one to the other. It is generally produced by hard work, or violent exertion for a short period, generally in breaking in a colt and putting him upon his haunches, as it is termed, at too early an age. The seat of the spavin is represented in plate 3, fig. 7. It seldom occasions lameness, unless considerable, and then makes a horse go very stiff, especially after working much.

The only remedy is firing, and sufficient rest; and when it is so considerable as to cause any degree of stiffness, it is advisable to have recourse to this operation. It often exists however in a slight degree, and without occasioning any inconvenience, and then it is better to leave it alone.

Thorough Pin.

This disease appears on the outside of the part marked 8, in plate 3, and is of the same nature as, and always accompanies the bog spavin; it is, indeed, part of the same disease; that is, when bog spavin affects the outside as well as the inside, or rather the fore part of the hock, it changes its name and becomes a *thorough pin.* It is unnecessary, therefore, to say more of this disorder, than that if it occasions inconvenience or lameness, firing is the only remedy.

Blood Spavin.

This disease consists in an enlargement of the saphena vein, which passes over the bog spavin, and often accompanies that disease. The remedy employed by farriers is to make an incision in the skin, and pass some thread, by means of a crooked needle, under the vein below the dilated part. In one case, after the vein had been securely tied, and the wound in the skin stitched up, the horse

was turned to grass; sometimes with a strengthening plaister or charge placed all over the joint. After he had been out about two months he was taken up and supposed to be cured; and so he was of the blood spavin, because the blood could no longer flow into the dilated vein. It should be known, however, that this large vein is the principal vein of the hind leg, and returns nearly all the blood that is distributed to the foot; stopping it therefore either above or below the joint, as in this operation, one might suppose would be a serious injury; no less than a rupture of the small veins, were the horse put to work immediately after. But during the time he is at grass these small veins become enlarged and strengthened, and at length capable of returning all the blood; not however when the animal is worked, and much blood determined to the foot; a swelling of the hind leg must then be the consequence. The good effect of the operation is often attributed to the rest the animal has; but the operation, though apparently absurd, is said to have been performed with complete success, after other remedies have failed.

Ring Bone.

Bony excrescences, or enlargements about the pastern, most frequently occur in the hind leg; sometimes they do not occasion lameness, at others they do, and that lameness is often incurable.

This difference depends upon its situation with respect to the joint: if it happens upon the centre of the bone, it often proves harmless; if on the margin of the joint, it is productive of lameness, which is often incurable. Firing is the only remedy likely to do good.

Splents.

These are bony excrescences on the fore leg, generally not far from the knee joint, and sometimes immediately beneath it, which is the worst situation for them, as they then render a horse liable to the *speedy cut.* (See *Cutting.*) A horse often becomes lame when throwing out a splent; but that state of the bone which causes the lameness seldom continues long; nor does it ever produce permanent lameness. If any remedy is applied, a blister is always sufficiently strong. A new method of treating splents has been lately introduced; that is, passing a seton under the skin and immediately over the splent. It is said to be an improvement. I once tried it in a case of old bone spavin, but it did no good; nor did firing, which was tried soon after, though the hot iron was passed through the skin, and into the bony excrescence. The old method of rubbing or bruising a splent, puncturing it, and rubbing in some blistering preparation, will often produce a considerable swelling of the whole limb, and do a

great deal of mischief. Lameness from a splent may sometimes be removed by placing a pledget of old linen, wet with goulard or saturnine lotion on it, and confining it with a bandage kept constantly wet. I have seen a good effect from diluted vinegar also.

Saturnine Lotion.

Super-acetate of lead	1 oz.
Vinegar	4 oz.
Water	1 pint.

Mix.

String Halt.

This has been properly enough named blind spavin. It is thought by the French to be of the same nature as bone spavin, the bony excrescence being concealed, or on the outside of the small tarsal bones, and out of sight. If any remedy is thought necessary for this, firing should be preferred; but this will generally be found to fail. A few years ago, I had the pleasure of spending a day with the late Dr. Jenner, at Berkley, when he informed me that String Halt depended upon a disease of the spine, and showed me several vertebræ, which afforded a proof of it: from what I have since observed, I am satisfied that this is the case. Firing and all other operations must therefore be useless.

Breaking Down.

This accident often occurs in racing, and sometimes in hunting, but very rarely upon the road. A strain in the back sinews is sometimes called by this name; but when a horse breaks down, the fetlock joint, when he rests on that leg, absolutely bears upon the ground. This accident is supposed to depend on a rupture of the great suspensory ligament of the leg; but sometimes it is occasioned by a rupture of the ligaments of the pastern, and a consequent dislocation of the small with the large pasterns. If we examine the tendons and ligament on the back part of the shank, we shall find that the great flexor, or perforans tendon, is supported by a strong ligament, nearly as large as itself, which proceeds from the back part of the knee, or from the upper and posterior part of the great metacarpal or canon bone. About 3 or 4 inches down it joins the perforans tendon, and becomes intimately mixed with it. If this part is examined it will clearly appear that a rupture of the suspensory ligament of the fetlock joint would not bring the horse down upon his fetlock joint unless this suspensory ligament of the perforans tendon were to give way also. (See plate 2, vol. iii. 6th edit.) I have met with a case of this kind, that is, a rupture of the suspensory of the tendon, in a waggon horse. It got well by rest, but was much shortened and thereby prevented the bending of the pastern forward, which was quite per-

pendicular, or rather inclined backwards. This horse died, and I had an opportunity of examining the part. I have also met with two cases of a rupture of the ligaments, by which the two pastern bones are held together. It happened to two nerved horses, that were driven in the subscription coach from Bath to Exeter. Both these horses came down upon the fetlock joint, and were therefore shot. A perpendicular section was made of the foot and pastern, when this dislocation of the pastern bones was shown very conspicuously. The suspensory ligament of the pastern joint embraces the two sesamoids laterally, and when ruptured it is probable that only one of its branches is broken, which is followed by a dislocation of one or both sesamoids: this accident also I have seen.

CHAPTER XXVII.

ON THE STRUCTURE, ECONOMY, AND DISEASES OF THE FOOT, AND SHOEING.

It has been justly observed that without a sound foot a horse is but of little value, however perfect he may be in all other respects. It is the basis of the whole superstructure; and when we consider what immense weight is sometimes thrown upon this part in the violent exertions to which the animal is exposed, it will not appear strange that it should be so frequently, as we find it, affected

with lameness. It has been the fashion for some years to attribute the frequency of the horse's lameness to bad shoeing; but it is time, as Mr. Bracey Clarke has observed, for all this idle declamation to cease. It is not shoeing that causes the peculiar frequency of lameness, and incurable lameness in this country; but the immoderate work the horse is made to do. Much has been said of the superiority of the French mode of shoeing, and attempts have been made to introduce an improvement on the French method into this country, and a very important improvement it certainly is; but as to the French shoe, considered without the method of nailing, in which they certainly excel, I think it the very worst form I ever saw in this country. As the diseases of the horse's foot form an essential branch of the subject upon which I am now writing, it is presumed that a brief description of its structure and economy will not be unacceptable to the readers of this small volume.

There is not, in the whole structure of the animal, any part so richly organized as the foot, although the eye perhaps may be offered as an exception; for it exceeds, in the extreme delicacy of its structure, any thing that can possibly be imagined.

To a common observer the foot may appear a mass of insensible horn; but it is composed of an assemblage of springs, especially when considered in relation to the fore leg, which admirably adapt

it, not only to the uses of the animal considered individually, but to the uses of man also; and so carefully has it been guarded, that were the animal employed only to supply the necessities of man, his feet would last as long, even if shoed, as any other part of his body. He has been made, however, subservient to his luxuries, and that too in so high a degree, that he has materially degenerated from his original strength and hardihood of constitution. The immoderate exertions in which he is now generally employed are such as sufficiently account for the great number of crippled horses that are constantly offering themselves to our notice, especially in stage coaches and post chaises. Post-masters and coach proprietors have been often reflected upon as the authors of the cruelties so commonly and so regularly practised upon those useful animals, but let those who travel, and insist upon being conveyed at the immoderate rate of eight, ten, or even twelve miles an hour, in all weathers, on all roads, and with the heaviest burthens,—let such persons pause for a moment, and consider in what degree they contribute to this evil. There cannot be a doubt that post-masters, coach masters, and indeed all other horse proprietors, would find it greatly for their interest to work horses with moderation; and I will venture to assert that this may be indisputably proved to the satisfaction of every reasonable and unprejudiced person.

In describing the horse's foot it may not be

amiss to take a general view of the fore leg, in which we shall find an assemblage of large springs, assisting in the same purpose however as those of the foot. The shoulder blade is placed obliquely against the side, and attached solely by muscles, by the elasticity of which the body of the animal, as well as the rider, is enabled to bear those violent motions which must have otherwise been insupportable. If we look at the skeleton of a horse, (see the Frontispiece to the Author's Veterinary Dictionary,) we shall be struck with the position of the shoulder-blade and the shoulder-bone, each lying obliquely, but in opposite directions, so as to form an acute angle at the joint, and of course a considerable spring. We may observe the same admirable contrivance in the hind parts, where the femur, or thigh bone, forms an angle with the pelvis, and with the tibia, or leg bone, or, as it appears, and is commonly named, in the living horse, the thigh bone. In viewing the fore leg of the animal, we shall find in the obliquity of the pastern another powerful spring; and when we consider the immense weight it must occasionally support, as in pitching from a high leap on the ground with a heavy weight, it must appear astonishing how such a tremendous shock can be supported by so small a body; yet we shall find upon examination, such provisions as will enable it to bear any reasonable weight that can be placed upon it; but, in the violent exertions I have just described, breaking down is not an unfrequent occurrence; which is

an utter destruction of this beautiful and powerful spring. If we now descend to an examination of the foot we shall find in its horny covering another simple and effectual spring; simple as to its construction, and effectual as to the purpose which it answers, which is that of yielding to the impulse of the animal's weight, and thereby breaking the shock, which must otherwise have been gradually destructive to the foot itself. The hoof is a secretion from the living part of the foot, not wholly from the coronet, but from the living surface which it covers, named by Mr. Coleman the laminated substance of the foot; and, by others, the elastic processes or membranes of the foot. As the quantity of horn necessary for the defence of the sensible foot is considerable, a large quantity of blood is distributed to it for the purpose, and is supplied by two large arteries which pass down on each side of the pastern; these give off considerable branches to the frog, cartilages, and coronary ring; but the trunk of the artery enters in at the posterior and inferior part of the coffin bone, and divides into eight branches within the bone, which pass out at the circumference, or angle of the toe, and give off innumerable branches about the inferior part of the laminated substance, especially about the toe. The distribution of blood to the frog is remarkable: here we find several branches of considerable size without giving off other branches as in the other parts of the foot, until they arrive near the surface, and here they spread

into innumerable branches, supplying the skin, or secreting surface of the frog, and communicating with those of the skin of the sole, or sensible sole: so that the frog and sole form one continued surface of skin, of great vascularity and sensibility; but greatly inferior in both respects to the laminated substance, which is more richly organized, both as to blood vessels and nerves, than any other part of the body. In taking a view of this part, the laminated substance, or elastic processes, we shall not be surprised at the numerous lamenesses that are produced by their being compressed, when there is no perceptible alteration in the form of the hoof. To return to the vessels of the frog, these pass through a bed of elastic matter, composed of numerous small cartilages and fatty membranes. These cartilages are so distributed, that the nearer they are brought together by the pressure of the animal's weight the more elastic do they become, until at length they are so compressed that they cannot be brought into a smaller space, and then they impart to the lateral cartilages the impulse they receive, which is again imparted to the heels and quarters of the hoof; and this is the only motion that takes place in that part. The laminated substance, or elastic membranes, yield a little downwards and backwards, and thereby admit of the motion I have described. From this view of the foot, it will appear that when the horse stands in the stable, without exercise, the veins of the fore-leg do not return the blood freely, from want of

the pressure which exercise occasions. The blood therefore accumulates in the foot. The vessels of the laminated substance, from the pressure of the hoof, admit only of a determinate quantity, especially at that part where the horn is remarkably thick, and where elasticity is not so essential. It therefore goes to the vessels of the frog, which, from their situation, admit of considerable distension, and these, reacting, throw the blood towards the surface, occasioning inflammation and a discharge of matter from its cleft or division. In this way thrushes are produced. The lateral cartilages are two elastic bodies attached to the coffin bone, at its upper part, and proceeding backward, like expanded wings, terminate at the extremity of the heel: they assist, as I have before observed, in expanding the heels and quarters. The navicular, or nut bone, is placed behind the coffin bone, and is attached to it as well as to the small pastern bone, and affords a synovial or slippery surface for the flexor tendon to move upon. This part with the coffin bone forms the coffin joint, and is represented in the perpendicular section of the hoof. Plate 7.

The small pastern articulates with the coffin bone and the nut bone below, and with the great pastern above: these are all the bones comprehended in a description of the foot. The coffin bone, however, is the only one which deserves particular notice, and that on account of the peculiarity of its structure. It is completely cellular

throughout, and has more blood within it than any one bone in the body, though not far from being the smallest of the whole. The great flexor tendon is inserted into the bottom of the coffin bone, and the extensor tendon on its front and upper part. Thus the sensible foot is composed of the pastern, the navicula, and the coffin bone; the lateral cartilages, the sensible frog and sole, and the laminated substance; at the upper part of which there is a kind of cartilaginous ring, which has been named by Mr. Coleman the coronary ligament, and by Mr. Bracey Clark the coronary frog band. This coronary ring, instead of terminating at the heels, is continued into the frog, and from this connexion, and its situation over the lateral cartilages, it must be subject to the same motion which these parts have. When the frog then is exposed to that pressure for which it was evidently designed, it expands and contracts, and in so doing communicates a similar motion to the cartilages, the coronary ring, and the heels and quarters of the hoof. I have thought this brief description of the foot quite sufficient for the reader's purpose; but if he is desirous of acquiring an useful knowledge of its structure, it will be necessary to examine the following parts, which he can easily procure at any kennel, and by comparing them with the plates that have been given in this and other books on the subject, he will soon acquire a sufficiently correct idea of the structure of the foot. Let a foot be cut off at the fetlock

joint, and sawed down through the centre perpendicularly, and then compare it with plate 15. Let another foot be sawed through horizontally, a little below the coronet, and compared with plate 16. Let a horse's foot, cut off about the fetlock joint, be placed in hot dung for two or three days, the sensible foot may then be taken out of the hoof; these are represented in plates 4 and 5. The coffin and pastern bones may be easily had at a kennel, and are represented in plates 11 and 12. The ligaments of the pastern, which are ruptured in breaking down, are represented in plate 10; and the preparation may be easily made by cutting away the back sinew, for they lie immediately under it. The lateral cartilages are seen in plate 10, and may be found by dissecting the sensible foot, which is shown in plate 4. The wall of the hoof, separated from the other parts, is represented in plate 4. This may be made by drawing the sole from a foot, after it has been soaked in water for a few days, and stripping off the hoof. To do this the pastern should be put in a smith's vis or vice, and then with the drawing knife and pincers it may soon be done. The bottom of the foot is represented in plate 23; and this may be seen in the living horse when at the smith's forge, without shoes.

By the method I have thus pointed out, a sufficiently correct knowledge may be obtained of the structure of the horse's foot. The most beautiful and expensive plates have been at times published

to illustrate the structure of the human body, and have been no doubt of great use to the student, in reminding him of the form and situation of parts he has at some former time seen demonstrated in the body itself: but to attempt to learn anatomy by plates only, however beautifully and correctly they may be executed, is known to be absurd, and never permitted by surgeons, though they are far from having the opportunities the veterinary student has of seeing the parts themselves; which the latter can do with scarcely any trouble or expense, whenever he pleases. The plates in this small volume, designed to illustrate the anatomy of the foot, are very indifferent; but will answer the intended purpose, if the advice I have given is attended to.

On Shoeing.

There is but little difficulty in adapting a shoe to a sound foot; that is, a foot that has a sound well formed frog, open heels, good bars, strong and rather concave sole, and a strong well formed crust or wall. To such foot the best shoe that can possibly be applied is that which has for many years been employed in the Royal Dragoons. I may have made some deviation from the form which was employed, and so may they; but the following is that which I now recommend. The shoe should be from half an inch to five-eighths of an inch thick, all around from toe to heel, and

of the same width, except at the heel, where it should be three-fourths of an inch wide. The nail holes should be made exactly similar to those of the French shoe, and the nails driven in a similar direction. When a foot deviates from the sound form the shoe must be formed accordingly. If the sole is in any degree flat and thin, the wide hollow shoe is absolutely necessary. If the heels are tender, and have corns, the bar shoe is the best that can be applied; and the tender heel, including part of the quarter, crust as well as sole, should be so pared down as to be at the distance of a quarter of an inch or more from the corresponding part of the shoe. These are the only shoes required on any occasion whatever. As for shoes for contracted feet, for straight pasterns or oblique pasterns, and various other shoes that have been occasionally recommended for altering the shape of the hoof, I consider them all not only useless but often prejudicial. In preparing the foot for the shoe, the *loose* parts only of the sole may be removed with the drawing knife; the ragged parts of the frog should be cut away, as they may serve to harbour dirt or gravel. If the toe of the frog is very hard and more prominent than the other parts, it should be pared down moderately. The heel of the shoe should have a perfectly flat and level bearing upon the junction of the bar and crust, which should be rasped to a flat surface for receiving it. The shoe should never extend beyond this part. The whole bottom of

the foot, indeed, should be rasped so as to be perfectly flat and level all around, so that when the horse stands on a plane surface, every part of the crust should bear on that surface. The shoe should be made level also on both surfaces, by the same criterion, and then it must of necessity be fitted to the foot. When this is the case, there will not be that motion in the shoe in travelling by which so many shining surfaces are often worn in it, and by which the nails are loosened, and if they are made of indifferent iron, or badly made, often broken.

The hind shoes are to be exactly like the fore ones, except in being made square, as it is termed, at the toe, for the space of one inch. By making the shoe as well as the hoof square at the toe, a steady point of bearing is afforded to that part which is the last to leave the ground. We may readily conceive that as this is the part from which those amazing bounds are made, in galloping and leaping, a more steady and firm point of bearing will be thus afforded, than by the single point which a perfectly round shoe would give. They are less liable also than the round shoe to interfere with the fore shoe. The heels should never be turned up unless it is in frosty slippery weather, and then it is an evil that must be submitted to. There is a drawing given of a frost shoe which was found by the Rev. Dr. Moore to answer a good purpose.

Injuries from Shoeing.

That which most commonly happens is termed a prick, and is a punctured wound inflicted by driving the nail too near to, or absolutely into, the sensible parts of the foot. In the first case inflammation is gradually produced, which terminates in suppuration, and if the matter has not got vent below, by taking off the shoe as soon as lameness is perceived, and making an opening for its escape, it will penetrate under the sole, detaching the horny from the sensible sole, and at length it will penetrate upwards and break out at the coronet. The lameness produced by this accident takes place gradually, generally after the first ride, sometimes after two, three, or four days, and in one instance I have known a fortnight elapse before the injury was discovered, and even then the matter had not broken out at the coronet. This must have been occasioned by a very trifling deviation of the nail from its right situation. When the nail is driven so as to wound the sensible parts, the pain it occasions is such as to make the animal draw back his foot in such a way that the farrier cannot be ignorant of having committed the injury. As soon as this happens, the shoe should be taken off, the sole near the nail hole for about an inch or two should be pared away with the flat part of the drawing knife, and the foot then wrapped up in a poultice. In three days after the infliction of the injury matter will have formed, and then an open-

ing is to be made in the thin part of the horn of the sole, in order to give it vent: a probe is then to be introduced to ascertain how far it has penetrated, and so far must the detached sole be completely removed. When the injury has been treated precisely in the manner I have directed, the cure may be finished by the tar ointment, and the horse will be fit for work in a fortnight after the accident. When a horse is found to be lame soon after shoeing, and upon taking off the shoe a small quantity of matter is observed to issue from one of the nail holes, it may be considered a certain indication of the nail having been driven too close, and matter having been formed in consequence. In this case the sole surrounding the nail hole is to be pared away very thin, or until specks of blood are seen, or a dark spot of horn is observed. On opening this dark spot matter will appear, that is, a dark coloured fluid, of an offensive smell; for such is the appearance of matter whenever it forms in a part covered with horn. The probe then will direct the operator how far it is to be removed, which should be every bit of horn that has been detached; no hollow part must be left, however small it may be. The cure may then be finished by the tar ointment. In this case, however, the sole may have ulcers on it, and these should be touched with a solution of blue vitriol before the tar ointment is applied.

Bruise of the Sole.

The sole may be bruised either from its being naturally flat and thin, or from being made so by the smith, and this he does from a desire of doing what he believes to be right; that is, to make the bottom of the foot concave when there is not sufficient horn to admit of its being made so, without making it so thin as to be incapable of resisting the blows to which it must of necessity be exposed. It may also happen from a careless use of the drawing knife, that is, by cutting away too much at once; in doing which they sometimes wound the sole, or leave a small part so thinly covered that not only the sensible sole, but even the coffin bone, become bruised, which cannot fail to happen when a foot has been thus pared. When this happens matter will form under the horny sole, and when this has been let out, and all the hollow horn removed, the horse will appear relieved; but sometimes the pain will continue, from there being matter deeper than this; that is, between the sensible sole and the coffin bone; this being let out, and all the surrounding horn thinned away, the foot should be wrapped up in a bran poultice: the following day the poultice will perhaps be unnecessary, and it may then be found that a small part of the coffin bone is bare, which may be distinctly felt when it is probed. This bare part of the bone should be scraped with a suitable instrument, and afterwards dressed with the tincture of myrrh:

this will in the course of a short time effect a cure. Before the horse is put to work the sole should be hardened; and this may be done by keeping it stopped with tar ointment.

Tar Ointment.

Tar and hog's lard equal parts; to be melted together, and when removed from the fire to be kept stirring until it is cold.

Over-reaching, Over-lashing, or Over-stepping.

These in old books of farriery were termed according to their situation in the heel, or above the fetlock joint, the higher and the nether *attaint*; from the French *atteint*. These accidents sometimes happen from the toe of the hind foot being too long, and not squared off as I have advised. It may also occur from bad riding, in pulling up a horse badly, and making him gallop false as it is termed. Whenever the wound is such as to leave a flap of skin, whether it be upwards, downwards, or sideways, it should be immediately cut off as close as possible; a re-union of the parts can never happen, and by leaving the flap, and attempting to effect the re-union of the parts, there would be thickening and a greater blemish, and its removal would be found necessary at last. This may be considered as a contused wound, and to all such wounds I think a poultice the best remedy. This probably will be doubted by surgeons; but in horse

surgery it will be found the best practice. When the inflammation has been completely subdued by this poultice, the astringent paste may be applied, and nothing more done for two days, when it is to be soaked and washed off, and a similar dressing laid on. Three or four of these dressings will generally effect a cure.

Astringent Paste.

Finely powdered alum and pipe-clay, in equal proportions; water enough to give it the consistence of cream. When the wound is perfectly healed, a little salad oil or hog's lard may be necessary to soften the cicatrix.

Broken Knees.

These like the preceding are contused wounds, but generally of a more serious nature, not only on account of the blemish, but likewise from the violence with which they are inflicted. Whenever there is a flap of skin, as I have described in the preceding article, it should be immediately cut off. A poultice is the best remedy for the first three or four days, or a week, and when the inflammation has been thus subdued, the white astringent paste should be applied, as directed in the preceding article, which see. When the wound is completely skinned over, a little hoof or tar ointment may be applied daily to promote the growth of hair; the ointment may be softened, if thought

necessary, by a little oil of olives, or coloured red or black by means of bole or lamp black.

Broken knees are sometimes attended with contused wounds of the front of the fetlock joint, which are to be treated precisely in the same manner. The upper part, or orbit of the eye, is sometimes wounded and even fractured in falls; this also should be poulticed, and when the inflammation has been subdued, it should be dressed with the turpentine ointment, that is, equal parts of lard or tallow and common turpentine, which is the best digestive that can be employed. In this wound, however, the injury of the bone causes a caries to take place; and if the wound does not heal readily by the digestive, this may be suspected. The wound should then be examined with a probe, and if the bone is found bare, it should be freely scraped with a drawing knife, and then dressed with tincture of myrrh or Friar's balsam, which will soon effect a cure.

CHAPTER XXVIII.

WOUNDS, BRUISES, AND OTHER INJURIES.

These injuries may happen in various ways, by kicks, by bites, in leaping over hedges or gates, by kicking against stalls, and many other ways. Various names have been applied to such injuries, according to the manner in which they are in-

flicted; but there is no occasion for such distinctions; they are all bruises or contused wounds, and require to be poulticed or fomented as I have directed in the preceding chapters; where I should have observed, that in all injuries of this kind, whether wounds or bruises, or both, the horse should be immediately bled freely, and have his bowels opened by a dose of physic. The diet also should be attended to, allowing only a very moderate quantity at first of grass, or bran mashes. In all those cases poultices are by far the best remedy, until the inflammation is completely subdued; and when the situation of the part will not admit of a poultice, which is seldom the case, then fomentations of warm water only, almost constantly applied, are the best substitute. When inflammation has quite ceased, which may be known by an abatement of the pain and swelling, and by the appearance of white matter, the poultice may be discontinued, and then the wound should be *carefully dressed to the bottom* with a tent of tow, dipped in melted digestive ointment. The cavity is not to be filled with the tent, but it must be introduced to the bottom, and then the wound will heal as it ought; whereas, if it is dressed superficially, or only syringed, it will often close over at the surface and the wound appear healed, while the matter is spreading and doing mischief at the bottom. There are four obstacles to the complete healing of wounds which sometimes occur, and these are, when the wound has been complicated with an in-

jury of a bone, a ligament, a cartilage, or a tendon. In either of these cases the fleshy parts and skin will generally heal readily, and the wound will appear nearly or quite healed, except a small or minute orifice from which a little matter oozes; and this orifice is not perceptible, being covered with spongy flesh, until a probe is introduced; it will then be found that there is a sinus running down to the bottom of the original wound, and there the probe will be resisted by the diseased bone, ligament, cartilage, or tendon. The bone may be easily distinguished by the sensation conveyed to the hand through the probe; and when this is felt a free opening should be made if the situation of the wound will admit of it, and the diseased surface scraped off. A tent of Friar's balsam should then be introduced, and continued until it is cured. If the first scraping has not been freely performed, a second may be necessary. Sometimes sinuses, or pipes as they are termed, remain after the inflammation of wounds has subsided. If these are superficial, running under the surface, or nearly horizontally, they require to be laid open, and then they heal readily. Sometimes they run obliquely inward, or perpendicularly, and then require to be dressed at first with stimulating or even caustic tents, of solution of blue vitriol; and these must be repeated until the sides of the sinus have sloughed off, and the very bottom of the wound can be distinctly felt. In all complicated ulcers of this kind, where the sinus runs in a winding or crooked di-

rection, or where there are two or more sinuses, the caustic tents must be repeated until they are brought to the state of one simple sore, the bottom of which can be distinctly felt; and if the bottom happen to be bone, it must be scraped freely and dressed with Friar's balsam. A good method of destroying such sinuses is to take some corrosive sublimate, or finely pulverised blue vitriol, and fold it up in a long narrow slip of thin whity-brown paper; this being neatly folded may be twisted at each end, and may thus be conveniently introduced into the sinuses, and forced to the very bottom with a strong probe. Several small parcels of this kind may be made and forced in one after another, until all the sinuses are completely filled. By these means a large core or slough will be brought out in four or five days; and if the sinuses are not then so destroyed that the bottom can be ascertained, the same dressing must be repeated.

There is a class of punctured wounds that will not admit of the treatment I have described; these are punctured wounds of the sheath of tendons, and the capsular ligament of joints. Such wounds often happen about the fetlock and hock joint, or in the sheath of the flexor tendon, or back sinew; and these are often attended with considerable inflammation and swelling. It will not be proper to introduce tents into such wounds, or to irritate them by probing: emollient poultices are considered the remedies for such wounds; but they

do not always succeed; I have in several cases found it necessary to touch the wound with lunar caustic, before I could procure any abatement of the inflammation and swelling, and I am inclined to believe that this had better be done on the first occurrence of such wounds. The caustic should be scraped off to a point, and introduced within the wound about the eighth of an inch or a little more; it should then be moved round a little, and withdrawn. I have seen a punctured wound in the fore leg, near the fetlock joint, get well rapidly after this had been done; though emollient poultices and fomentations had been carefully employed for several days before without doing the least good; on the contrary they were doing harm, for the inflammation, pain, and swelling, certainly increased while they were employed. But the caustic seemed to operate almost as a charm; for the leg got well in two or three days after it was applied. I have seen a similar good effect from it in a punctured wound of the hock joint.

In lacerated wounds, as they are termed, the skin is often much torn, and so are the muscles or flesh. *Now the muscles must never be stitched up, on any account whatever;* the skin *only* is to be stitched or sewed up, and that will rarely be of any use in the horse, as union by the first intention, I believe I may venture to say, can never be accomplished in the horse, except in one situation, and that is in the forehead, when the skin has been torn neatly down or up and not bruised.

When the skin of a lacerated wound has been stitched up, the stitches always give way, and the wound is completely open again by the fifth day, and then the flap of skin may as well be removed, for it never will unite. The scar will then be much less than a person would imagine, for the skin and hair will be in a great measure *regenerated*, and scarcely any blemish will be left.

Bruises always require to be poulticed, and there is scarcely any situation where this cannot be done, if a person will but take a little trouble about it. If, however, it cannot be done, a fomentation is the best substitute. For bruises on the back the old farriers employed a greasy dish-clout, and this, next to a poultice, is perhaps the best remedy; for the cloth has been so softened by almost constant maceration in water, and is so completely imbued with grease, that it really becomes a good emollient application, and only requires to be kept wet. By this treatment bruises will be generally brought to suppuration, and if they are capable of being dispersed, poultices are the best means of effecting it. When a bruise has been brought to suppuration, or has thrown off a slough, it may then be considered as a wound or rather ulcer, for such wounds do become when they have suppurated, and must be treated according to the directions I have given under that head. These are all the instructions necessary to be given for the treatment of wounds and bruises. I think there is no occasion here for the classification and distinctions that

are employed in human surgery, and it will be found, I trust, that what has been said on the subject, will be sufficient for every accident that may happen.

I have already given some cases, such as broken knees, and shall now proceed to others which may serve as illustrations of the practice I have recommended.

Saddle or Harness Galls, Warbles, Navel Galls, &c.

These may be considered as bruises, and when it can be done should be poulticed, until the swelling has been dispersed or has suppurated. If the matter has not sufficient vent, the opening may be enlarged or the sinus laid open, if there is any. It must then be dressed with digestive ointment, and when it has been reduced to the state of a clear open sore, the cure may be finished by the astringent paste.

Sitfasts.

These appear like dark-coloured scabs on the back, but are really dead hard skin, and cannot be removed until they have been poulticed a few days. Then they may be separated by means of a pair of pliers; but it requires some force to remove them, and generally a few strokes with the knife. When this has been done the cure may be completed with the astringent paste, applied once in two

days, and the scab removed previously to each application. A little salad oil may be necessary to soften the cicatrix after the wound is healed.

By repeated bruises of the back part of the saddle, the spinous process of one of the lumbar vertebræ is sometimes injured, and an enlargement takes place on which it is very tender, and requires to have the saddle elevated, or channelled in that part to secure it from pressure. Horses sometimes become very lame by travelling in muddy roads, merely by the mud being splashed up between the arm and chest, where by friction of the girth against the skin, it causes inflammation and great soreness. The best remedy for this is the greasy dish-clout before described, otherwise emollient fomentations, or the saturnine lotion and rest.

I have found the following lotion an excellent application in such cases, as well as in allaying the excessive irritation of a blister, when it has been made too strong.

Lotion.

Sulphate of zinc . . . . 1 oz.
Super-acetate of lead . . . . 1 oz.
Water . . . . 1 quart.

Mix.

Fistula of the Withers.

This disease comes by very severe bruises from the fore part of the saddle, which being neglected

and repeated from time to time, produces at length an inflammation of the spinous processes of the dorsal vertebræ. A deep seated abscess is the consequence, and the matter penetrates in different directions before it arrives at the surface, where at length it causes a tumour, which is very different from a common abscess, and requires always a considerable time to be cured. To give vent to the matter is the first object, and when that has been done, the extent of the injury must be ascertained. When this cannot be done, and this is sometimes the case, the caustic tents must be introduced, as I have described in the chapter on wounds and bruises; and when the slough or core which this causes, has separated, which will generally be in three or four days, the finger should be introduced as well as a probe, and the direction of the sinuses ascertained. A depending opening for the matter to run off freely must always be obtained, by cutting open the part freely. If a clean sore has been thus produced, or if it can be ascertained that there are no more sinuses or pipes, the cure may be effected by mild dressings, or tents of digestive ointment, tincture of myrrh, &c.; but this is seldom the case, and repeated dressings with caustic tents are generally necessary. As soon as the bottom of the sore is arrived at, it will often be found that the tops of the spinous processes or the ligament covering them have been injured, and the bare bone may be distinctly felt with the probe. When this is the case the bare bone must be

scraped with a suitable instrument, and then dressed with tincture of myrrh; after this the wound will readily heal by continuing to dress it with tincture of myrrh or digestive ointment, according to the directions given in the chapter on wounds.

Poll Evil.

This disease is produced by a mangy horse rubbing his head under the manger, and sometimes lifting it up suddenly when frightened, also by hanging back upon his halter. Repeated injuries of this kind produce at length inflammation of the first vertebra of the neck, and the matter that forms in consequence being so completely confined, spreads and renders carious the under surface of the ligament of the neck, as well as the posterior part of the occipital bone, and sometimes of the atlas or first bone of the neck also. This disorder then, is precisely of the same nature as fistula of the withers, and requires a similar treatment. There is great difficulty in obtaining a depending opening or drain for the matter in this case, and from the large arteries near the bones of the neck, it cannot always be effected by the knife. Caustic tents therefore must be depended upon for that purpose, and if properly applied and persisted in, will generally accomplish a cure. The wound, however, must be carefully examined from time to time with a probe, and if a carious bone can be

felt, it must be freely scraped, and if a loose bit is found it must be taken out. When the direction of the sinuses can be ascertained, it will be found sometimes that a drain can be made by means of a seton. But setons should never be put in, as they sometimes are, without it has first been ascertained that a drain can be immediately made by them, and that a drain cannot be obtained but by laying open the parts freely.*

By following implicitly the directions I have given for the treatment of poll-evil and fistula of the withers, those diseases will always be found curable: but it will also be found, that patience and perseverance are essentially necessary.

Many country farriers have a secret method, or rather a receipt, for the cure of the fistula and the poll-evil, and they certainly sometimes succeed. The preparation they employ appears to be arsenic mixed with a little lard, which, however carefully employed, produces the most alarming degree of inflammation and sloughing; so much so, that I have no doubt of its sometimes proving fatal. I have lately known an intractable case of fistula cured apparently by this application. The fistula was in the lower part of the neck near the withers, and not in the usual situation of fistula. It appeared as if about the fifth cervical vertebra had been injured. The wound had been healed seve-

* Mr. James Clark strongly recommends setons for the cure of the poll-evil, not only as the most expeditious and least painful method, but likewise on account of its causing less blemish.

ral times, but always broke out again. At length the case was undertaken by a farrier possessing this secret, who after making a suitable opening with a hot iron on the opposite side obliquely upwards, introduced his arsenical remedy. The consequence was, a dreadful degree of inflammation and sloughing, which greatly alarmed the proprietor. But the wound gradually filled, and after some time perfectly healed.

I have ascertained, since writing the above, that poll-evil is caused by an overstretching, or by a frequent effort to stretch the ligaments which unite the two first bones of the neck, or those which unite the first bone to the head. This may be done by too severe a use of the bearing rein, especially in horses unaccustomed to it. It may happen also from bitting a horse improperly when breaking. I once attended the opening of a horse that was never suspected of having a disease, but died in consequence of some accident. On cutting off the head, I found that the first bone of the neck as well as the under surface of the great cervical ligament which passes over it were highly diseased. Since that I have examined another horse that died of an inflammatory disease; I had no suspicion of any disease in the ligaments which unite the two first vertebræ of the neck, but merely wished to examine the part. I found them however in a state of disease. For incipient poll-evil I would advise the application of the following ointment, which is to be well rubbed into the swollen part.

Ointment.

Tartarized antimony, crystallized, very finely powdered	. . . .	2 drams.
Olive oil	. . . .	2 drams.
Hog's lard	. . . .	1 oz.

Mix.

When this is properly applied, it acts as a powerful blister, but never blemishes. Should the horse, however, after a day or two appear disposed to rub the blistered part, the following lotion may be applied three or four times a day.

Lotion.

Sulphate of zinc	. . . .	1 oz.
Acetate of lead	. . . .	1 oz.
Water	. . . .	1 pint.

Mix.

Quittor.

This is a consequence of a contusion on the coronet of the worst kind. The injuries that a horse does himself in the stable by stepping accidentially on the coronet, or a little above or below it, are seldom so severe as to come under the denomination of quittor. It is almost always done in frosty slippery weather, when in endeavouring to save themselves from falling sideways, they step with dreadful violence on the foot that is sliding inwards, generally upon the coronet of the inside quarter. The injury is so considerable, that the cartilage, the extensor tendon, or the coffin bone,

is always more or less injured. This is the cause of the obstinacy of the disorder; it is that also which renders the mode of treatment I shall point out essentially necessary. In the first place, it is necessary to find out with a probe the direction and extent of the sinuses or pipes; this being done, let some powdered sublimate be spread on some whity-brown paper that has been smeared with lard, and then let it be cut out in narrow slips; let these slips be folded up, and twisted into a point at the ends. One of these is to be first introduced carefully, and be forced if possible to the bottom of the sinus, and if not, as far as it can be forced with a strong probe. When this has been done, another slip is to be forced in, in a similar manner, and so on till the sinus is quite full. A piece of tow is then to be placed on the part, and bound down with tape or listing, so as to keep the dressing in. This dressing in the course of four days will have done its work; the bandage is to be removed, and then a slough or core will readily come out, and leave a large open sore, which will enable the operator to see the bottom of the injury; and then, if he dresses it daily *to the bottom*, with tents of lint dipped at first in a solution of blue vitriol or butter of antimony, afterwards in Friar's balsam, the wound will heal gradually, and the horse will be radically cured.

False Quarter.

When the coronary ligament has been much injured by treads or other contused wounds, it sometimes forms horn of a lighter colour than the rest of the hoof, and less perfect, often leaving a fissure or seam from the top to the bottom. Sometimes the whole quarter is imperfect, and incapable of bearing pressure; therefore in such cases a bar shoe is necessary, by means of which, when the false quarter is kept properly pared down, it will be at some distance from the surface of the shoe, and thus be always free from pressure.

Corns.

This is a very common and a very troublesome disorder, and may truly be said to be often occasioned by the smith, being generally in consequence of bad shoeing. Corns most commonly happen in white feet with weak low heels; but they are too common in feet of all colours. They are occasioned by the pressure of the heel of the shoe, either by its bearing directly on the sole when it is too thin to bear the pressure, or by its forcing the heel of the crust inwards. In this way the sensible sole and laminæ are bruised, their blood-vessels ruptured, and the blood penetrates into the pores of the horn, causing the dark red appearance observable on removing the shoe, and scraping off the surface of the sole at the part marked *d*, *d*, fig. 1,

plate 6. This bruised part is exceedingly tender, and incapable of bearing the pressure of the shoe, and so are the crust and bar on each side of it. In the treatment of this complaint all this must be cut away, that is, all the parts must be so cut down, crust, bar, and sole, between the lines marked *a*, *b*, fig. 2, plate 6, that when a bar shoe is applied it may be full half an inch distant from its surface. In this way a horse will be able to do his work, provided the shoe is removed, and the heel pared down as often as is necessary. As in this case the frog will be constantly receiving considerable pressure from the bar shoe, it is necessary to take care that the heels are not too thick and inflexible, in which case it is necessary to rasp them; and whenever there is a morbid degree of heat in the feet, or dryness, they should be kept constantly moist and cool in the stable, either by poultice or by several folds of old woollen wrapped round the coronet, and kept constantly wet. The common practice of paring *out* the corn and leaving the bar and crust to be in contact with the heel of the shoe is doing no good, nor would it afford even temporary relief, if the shoe were not bent up or made to bear off that quarter a little, as they term it; yet after riding a few miles the shoe is sure to yield to the horse's weight, and bear upon the tender heel. It is thus that corns are made so troublesome as we find them, and many horses are rendered nearly unserviceable, or absolutely ruined by this improper treatment. Matter is often form-

ed within the heel from this sort of management, and breaks out at the coronet, frequently doing great mischief, and even rendering a horse useless. When corns have been suffered to go this length the foot must be poulticed, and all the hollow horn cut away. After the inflammation has been thus completely subdued, the sensible parts which have been laid bare may be dressed with Friar's balsam and the tar ointment. The radical cure of corns is always practicable if taken early, but in old cases the sensible parts will always remain in a tender state, however carefully they may be treated, and will always require the defence of the bar shoe, applied as I have described. A run at grass *without shoes* is a great relief to a horse with corns, provided the tender heel is cut down as I have described, and the heel and quarter rasped very thin. When a radical cure is attempted, this is the most likely means of effecting it.

Sand Crack.

This is an accident that happens to dry brittle hoofs, and is in fact a breaking or fracture of the horn in the weakest part, that is, at the upper part of the inner quarter. A sand crack almost always extends to the sensible parts, and can seldom be cured if the horse is kept in work. The first thing to be done is to open the crack with a drawing knife, for it generally runs obliquely under the

horn, and cut out every hollow part completely, however far it may extend under the crust. Every particle of horn that is hollow or detached from the sensible parts must be completely cut away, some tar ointment should then be applied, or at first a solution of blue vitriol. If there is much lameness or inflammation in the foot, it should be poulticed for several days or a week, and then the horse should be turned to grass without shoes, or with a bar shoe, for three weeks at least, or until an inch of new hoof appears above the crack. A little blister ointment just above the crack often does good, and tar ointment on the crack and adjacent horn. Observe, too, that the quarter where the crack is must be rasped away as thin as possible. In this way sand cracks may be always cured without difficulty. The brittle state of the hoof, however, must be corrected when the horse returns from grass, by paring the soles rather thin, applying a wide hollow shoe, and keeping the foot stopped, not with cow-dung or clay, as has been advised, but with the tar ointment; this will be absorbed through the horn, stimulate the secreting vessels, and cause a plentiful effusion of that odorous vapour which is constantly escaping from the bottom of the foot. The vessels being thus unloaded, the temperature of the foot will be reduced, and the secretion of horn will be at the same time so increased, that the horse will soon be able to go with a narrower shoe. The foot may be further cooled, should it be necessary, by keep-

ing several folds of old woollen constantly wet round the coronet. It is an erroneous opinion that this tar ointment stopping heats the foot, it really tends to cool it, and renders all the horny box tougher. Paring the frog also is very useful and necessary when it becomes hard and dry (see *Shoeing*); this may be done with a rasp and drawing knife, and then it should be kept covered with tar ointment. This ointment should be rubbed also about the heels of the frog, and on the coronet, especially when they are dry and full of cracks: in this case it should be done twice a day. Cow-dung is by no means invariably a good *stopping*. It is employed to cool the foot, and for the purpose of softening and rotting a very dry thick sole and frog, and then it does a great deal of good, and enables the smith to pare them sufficiently with more ease and more effectually.

In sand cracks that have been neglected or improperly treated, I have seen a good effect from the application of the actual cautery, which causes an effusion of glutinous or horny matter from the sensible parts. In such cases I have applied also a little blister to the coronet above the crack. I think the actual cautery is of use also when there is great tenderness in the part; it seems to destroy that morbid sensibility, and bring the part to a healthy state.

Gravelling.

A horse is said to be gravelled when dirt or gravel works in between the sole and the crust, generally at the heel, in consequence of which matter often forms, and spreads a little under the sole or upwards, and sometimes breaks out at the coronet. The remedy in this case is to cut down the heel as is directed for corns, removing every bit of horn, whether of the sole or crust, that has been detached from the sensible parts. A poultice may then be necessary, especially if there is much pain and inflammation, or it may be required to soak out the gravel completely. When this has been done, a solution of blue vitriol, tincture of myrrh, and the tar ointment will be sufficient to effect a cure, unless any red flesh appear; then a stronger solution of blue vitriol or butter of antimony may be required. It will be necessary to employ a bar shoe until the heel is grown down strong, and properly connected with the sole.

Chronic Lameness, Founder of the Foot, Contracted Heels, Narrow Heels.—French, *Pieds Encastellés.*

This is the most common and destructive disorder to which the horse is liable, and may almost be said to be peculiar to this country. According to M. Jauze, the number of foundered horses in this country compared to those of France, is as ten to

one, and this he attributes to our mode of shoeing. I believe he is perfectly right as to the proportion of foundered horses between this country and those of France; but as to shoeing, it has nothing at all to do with it. It is entirely caused by the immoderate work that horses are made to do, and until this evil is corrected the number of such lamenesses will not diminish, whatever mode of shoeing may be employed.

I think it necessary, however, to observe in this place, that a great deal may be done for the relief of post and coach, and I may add waggon horses, but more especially for the two former. They are generally shoed in the most slovenly and injurious manner imaginable, and this not altogether from the fault of the smith, but of the proprietor; who, in endeavouring to get his work done as cheap as he can, is not aware that he is causing his horses to be crippled. Corns are very common among such horses, and instead of being properly managed, the horse is compelled to work with them as long as he is able to stand. Their feet are always in a state of inflammation, and no means are employed for relieving them. The low price at which the smith works will not permit him to do what is necessary to the feet. He is sometimes allowed, it is true, a compensation in attending them when they break out at the coronet from neglected corns, or become so lame from excessive inflammation in the laminated substance of the foot that they are unable to stand. He is then permitted perhaps to rub in

some strain oils on the shoulder or fetlock joint, or he may be paid for bleeding now and then when a horse is too full of corn, or worked into a fever, and then suddenly cooled in a pond or river, or he may be allowed to give some cordials when a horse is exhausted by excessive labour. But it is better for a post-master to attend to a horse's feet himself, and pay the smith a fair price for his labour.

If, at the same time, he attends diligently to his stables, and sees that his horses are properly fed, and worked with moderation, he will have nothing to pay for bleeding or poisonous drenches, and his horses will last him double the time they now do, and have no interruption to their labour by lameness or sickness. Chronic lameness may exist in various degrees, and in the early stages of the disorder a horse may do considerable work, by paring his feet properly and keeping them cool and moist; by paring the soles, putting on a wide hollow shoe, and keeping them stopped with tar ointment. By such management the progress of the disease may be retarded, and the horse much relieved; but it can never be cured. Most commonly the disease gradually gets worse, and at length the horse becomes unfit for every kind of work. At this period the horse is generally blistered or fired, and turned to grass. But this never does any good; shoes with claws, or hinges and screws, have been proposed, and employed with a view to open the heels; but of course they have never done any good, either in the way of prevention or cure.

The hoof has been all rasped away, and the horse turned to grass until a new hoof has grown down of a proper form, but it has never done any good. That cruel operation of tearing off the sole, technically termed drawing the sole, was formerly practised for it, but is now I trust completely discontinued. In short, every thing that human ingenuity can devise has been tried, but nothing has ever been found to cure this disorder. I believe at this time all veterinarians agree in the opinion of its being absolutely incurable.

A frequent cause of chronic lameness is a disease of the lowest synovial cavity, that is, where the tendon moves upon the navicula or nut bone. I have lately examined the feet of two horses affected with this kind of lameness. In one, a carriage horse that had been lame two or three years, I found the cavity quite dry and of a yellow colour, and on the surface of the nut bone there were many minute bony excrescences, about the size of millet seeds. In the second, a stage-coach horse that had been working in a crippled state for some time, I found the navicular synovial cavity in a similar state; but here the coffin joint also was diseased: there was one part of the articulating surface of the coffin bone where the cartilage had been worn away, and appeared as an ulcer, and on the lower articulating surface of the small pastern, there were three spots from which the cartilage had been worn. The first horse had a seton passed through the frog, which appeared for a time

to afford some relief. This kind of lameness never can be cured, however it may be palliated, and its progress retarded in its earlier stages. There is one method, however, which completely relieves the horse, and often for a considerable time, and that is, the nerve operation, which I shall now describe.

The Nerve Operation.

The horse being thrown down and secured, according to the directions given under that head, an incision is to be made through the skin, three inches above the most prominent part of the fetlock joint when viewed sideways, and just within the flexor tendon, or back sinew, as represented in the plate of the nerve operation in vol. 3; where the subject is more fully discussed than in the present volume. The situation for the incision may be seen also in plate 3, fig. 9; that is, on the third line of the near leg, which is represented as having been fired. The incision having been carried quite through the skin, the white cellular membrane will appear; this must be carefully lifted up with the forceps, and as carefully and gradually dissected off, and then the nerve will appear, (as represented in the Frontispiece of vol. 3,) with the blueish-coloured vein immediately behind it; that is, towards the suspensory ligament and bone. As soon as the nerve is seen, a tenaculum or a large crooked needle, armed with a little small twine, is

to be passed under it, from within, outward, in order to avoid puncturing the vein; and, with the same view, the point of the needle may be blunted in the most trifling degree. A needle should be made for the purpose, not quite so crooked as they commonly are, and curved only towards its extremity. When once the twine is got under the nerve, all the difficulty is over; the needle then may be taken out, and the nerve being gently lifted up with the twine, the cellular membrane underneath may be snipped away with a pair of scissors, or with a knife, carefully, so as to admit of a slender curved bistoury being passed under it without touching the nerve with the edge; as soon as this is done, and the nerve cleared up to the highest part of the incision, the probe-pointed curved bistoury is to be passed under it at the highest part, and the nerve quickly divided by a drawing kind of a stroke. This is necessary, that the nerve may be divided with as little violence as possible: for when it is done with scissors, or by lifting the knife directly up, or with a knife that does not cut well, a thickening will remain at the upper extremity of the divided nerve, with considerable tenderness; and when this happens to be struck in going, it gives the horse intolerable pain, and makes him go lame for a short time. The nerve cannot be divided with too keen an instrument, or too gently. The division of the nerve causes great but momentary pain, like that of an electric shock, apparently, and the horse's struggling at that moment

must be guarded against; but as soon as it is done, the pain of the operation may be considered as over: the inferior portion of nerve is then to be laid hold of by the forceps, and from half an inch to an inch cut out. To perform the operation neatly an incision of one inch is sufficient. The skin should be closed with one stitch and then the operation is finished, for no bandage or dressing is required. For the first four days the leg should be sponged several times a day with tepid water: on the fifth the stitches will give way and the wound will open, but this must not be attended to. No kind of dressing is necessary; the wound will be completely healed in three weeks, and then, or even a week before this time, the horse may be turned to grass, and there he should be kept three weeks at least, and longer in proportion to the injury the muscular system may have suffered from hard work.*

Wind-Galls.

These consist of distended bursæ mucosæ, which have been described as small bags or sacs filled

* Mr. Coleman is of opinion that it is desirable not to deprive the foot entirely of its sensibility; and therefore advises that the operation be performed in the pastern on both sides, cutting out a portion of the large branch of the nerve only, or that which runs down behind the artery, and close to it. The anterior branch being left, will probably leave as much sensibility as will make the horse step more cautiously. This is certainly an essential improvement, and renders the operation less hazardous.

with synovia: and interposed between tendons and the parts upon which they move. In a former chapter (see page 217), I have shown that this is not the case. Wind-galls seldom occasion lameness, and rarely disappear even after blistering and rest. Firing and long rest are the most likely means of strengthening the parts. In cases where no inconvenience is felt from them this severe operation is not advisable, but the legs may be kept bandaged.

Cutting.

This depends generally on a bad method of going, and on fatigue, especially in young horses when worked too early, as they almost always are. Sometimes it depends on faulty conformation, and then can scarcely ever be remedied. The best plan to be adopted in cutting is to leave it entirely to a good smith. If a horse cuts merely from fatigue, as is sometimes the case, it is because he is worked beyond his strength and ability; the remedy is then obvious. If a horse, or rather colt, is too young for work, he should be turned to grass without shoes until he acquires sufficient strength. Boots, or contrivances for defending the wounded part, may sometimes answer the purpose; but sometimes, too, they are a proof of a remedy being worse than a disease. The *speedy cut* is the most dangerous kind of cutting: it is so named from the blow being given on the inside and lowest part

of the knee, while the horse is in a full trot, and the pain is often so intolerable that he falls down suddenly, as if he had been shot. By repeated blows the part becomes swollen and more exposed to injury, though probably more callous and less sensible. There is no effectual method of guarding against this accident, or of preventing it, except careful shoeing and riding or driving the horse slowly: perhaps the extent of the rate at which the horse may be ridden, is six miles an hour, and then he may not lift his feet sufficiently high to strike the injured part. Carriage horses that have the speedy cut should be driven without bearing reins, and with an easy bridone bit.

Injuries that occur in Hunting; such as Wounds from Stakes, Stubs, and Thorns.

When a horse is staked in going over a hedge, the first thing to be done is to remove carefully every part of the stake that may have been left in the wound. He should then be bled freely, to the extent of six quarts at least; being led carefully to the stable. His bowels should be emptied by clysters, and the wound frequently fomented for a considerable time together with water, blood-warm, and not hotter. No kind of tent or dressing whatever should be applied. The horse should be fed with bran mashes chiefly, and only a few pounds of hay given daily, that his bowels may not be loaded. The fomentations are to be con-

tinued as long as the inflammation continues, or the pain is considerable, or until white thick matter is seen to flow from the wound. It must then be carefully dressed to the bottom with tow, or a tent, as it is termed, dipped in melted digestive ointment. In applying the tent it must not be put in so as to fill the wound, but lightly; still it must always be put to the very bottom at every dressing. If it is a flesh wound only it will by this treatment soon heal; but if a bone, a ligament, or tendon, be injured, a sinus will remain; and if it is a bone there will be a caries or rottenness sometimes, which will require to be scraped off as directed in the chapter on contused wounds. When a horse is stubbed about the feet or legs, the wound must be carefully examined, and every particle of the stub removed by means of a pair of dissecting forceps, which every sportsman should keep for this purpose, and for extracting thorns. The horse should be bled freely, and the part wrapped up in a large emollient poultice, which should be continued until the inflammation is subdued, and white matter is discharged from the wound; it must then be dressed to the bottom, as described in the chapter on contused wounds, with digestive ointment, or tar ointment, or Friar's balsam. In all wounds of the foot, tar ointment is the best digestive; in wounds of other parts, the following digestive: in small fistulous wounds or sinuses, Friar's-balsam, tincture of myrrh, or solution of blue vitriol may be necessary. (See *Contused Wounds.*)

Digestive Ointment.

Common turpentine, strained, hog's lard or tallow, equal parts; (in summer tallow may be preferable to lard;) let them be melted together, and then stir in a small quantity of powdered verdigris; continue stirring until it is cold.

The verdigris may not be necessary.

Wounds from thorns are often very troublesome, and are to be treated as directed under the head punctured wounds. It is necessary, however, in the first place to examine the part carefully, and extract, with a pair of dissecting forceps or pliers, every part of the thorn that may remain. When a tendinous part or a joint has been punctured by a thorn, a very troublesome lameness is sometimes the consequence, especially when the thorn has not been extracted immediately, or soon after the accident. Emollient poultices do not always remove the inflammation produced by such wounds, as might be expected; and when they are found to fail, lunar caustic should be applied; and if the lameness still continues, the part should be blistered. In dissecting the legs of horses after death, that have been perfectly sound and free from swelling, I have found thorns in different parts, lying flat, and evidently harmless; but I dissected a leg lately of a pony that had been very lame, and found that the two flexor tendons had formed adhesions immediately below the fetlock joint, evidently from inflammation produced by a thorn;

for I found the point of the thorn, though probably the accident had occurred several months before. It is remarkable that the thorn was very black, as if charred, and all the surrounding parts were nearly of the same colour.

Ossified Cartilages, or Ossification of the Lateral Cartilages.

This disease should have been noticed with others belonging to the foot; but, as there is an index at the end of the volume, the omission is not of importance. This disorder is often met with, and is sometimes caused by quittors. In draught horses it is not of so much importance: it often occurs, however, when it cannot be traced to any tread or bruise, and I believe is not always occasioned by such accidents; but sometimes simply from inflammation of the foot, or contraction of the heels, and continues, although the cause has been removed. Inflammation of the foot, however, and temporary lameness, are often recurring in consequence of ossified cartilages, especially when such horses are trotted fast, or by hard trotting, as it is termed. The concussion this occasions from the loss of those elastic cartilages, for such they were, inflames the foot and makes the horse lame. When this happens ignorant farriers sometimes fire or blister the part, or bore it with a hot iron, and bring out a slough or core, with caustic, with a view to remove the ossified

cartilage, which is not only impracticable, but extremely absurd. Let the sole be pared, and the whole foot wrapped up in a large bran poultice for a few days, and the lameness will generally be removed. If this fails the part may be blistered, and the horse turned to grass. Such horses are not fit for violent exercise of any kind.

Wound of the Coffin Joint, from treading on a Nail, or picking up a Nail, as it is termed.

This accident is very common in cities or large towns, especially on unequal pavement, or pitching where a nail accidentally thrown out, or lost from a shoe, is liable to stand with its point upwards. The part of the foot that is penetrated is the frog, the sole being always too hard. Sometimes the nail enters the cleft, or division of the frog, at others, and more commonly, in the cavity, by the side of the frog, and generally in a direction obliquely backwards. Sometimes it passes so obliquely that it glides over the flexor tendon, and penetrates only the fatty elastic matter of the frog; which is a far less dangerous accident then when it passes through the tendon, or into the coffin joint. Sometimes the tendon is only wounded, and not penetrated by the nail; but even this is a dreadful accident, and productive of long and severe lameness. Of whatever kind this accident may be, the remedy is the same, and there is only one remedy, that is, to pare the sole and frog as thin

as possible, and keep the foot wrapped up in a poultice until the disease is cured. When the frog becomes soft and spongy, the tar ointment may be rubbed on it, and so it may on the sole: but the poultice may be continued. When the injury is confined to the fatty elastic substance of the frog, it soon gets well after breaking out at the back part of the heel above, which it always does. When the tendon has not been penetrated by the nail, it gets well after some time, and may require to be dressed with tincture of myrrh; but when the coffin joint has been penetrated, the horse will always remain lame after the wound is healed, and this is the best termination that can be expected, if the lameness does not prevent him from doing moderate draught-work; for it has sometimes caused the animal's death, or such a hopeless degree of lameness, that it has been found necessary to put him out of pain by shooting him.

CHAPTER XXIX.

ACUTE FOUNDER.

Chill.—Body Founder.

This disorder has been so fully treated of in the third volume, that it will be sufficient to observe here, that it is brought on by excessive exertion, and a consequent exhaustion of nervous power, and not merely by a *chill* or suddenly

cooling the animal, as it is supposed to be. This excessive exertion of the muscular system brings on a peculiar state of inflammation in the whole body; so that not only the muscles of the loins and hind parts, but every other muscle, and even the heart and capillary arteries participate in the affection. Most commonly when the horse is led out of the stable, or rather when an attempt is made to lead him out, for he is often too stiff to be moved without great difficulty, there appears to be a rigidity of the whole muscular system; and sometimes the muscles of the jaw also are affected, (or there is a locked jaw). In some cases the hind parts are most affected; and sometimes the shoulders, or foreparts. The kidneys often partake of the affection, the horse voiding high-coloured urine, sometimes mixed with blood: this happens only in bad cases, and then the kidneys are often inflamed; and the pulse is quick, and accelerated by the slightest exercise. The inner surface of the eye-lids are always very red. The horse should be immediately bled until he becomes faint; the bowels should be emptied with clysters, and the stable should be made as cool as possible. Cordials are commonly given in this disorder, from an idea of its being occasioned by sudden cold, or a *chill;* and it is often aggravated, no doubt, by the common practice of plunging a horse into a pond, or river, after violent exertion, or exhaustion from exertion; or by the still worse practice of suffering the animal to stand in the rain while the rider is

regaling himself in a public house. Cordials, however, are poisonous. When the animal has been bled, in the manner I have described, an opening ball, containing 4 or 5 drams of aloes, with a little ginger and soap, may be given. When the loins are principally affected they should be covered with fresh sheep-skins, the flesh side inward, so as to keep up a copious perspiration. If the horse is not relieved by the first bleeding, it must be soon repeated with the same freedom, and this may be necessary twice or three times. As long as the under surface of the eye-lids continues red, so long will bleeding be necessary, especially if the rigidity or stiffness of the muscles continues. This disorder is sometimes complicated with inflammation of the lungs, and sometimes the bowels are affected: but more commonly the kidneys. (See *Inflammation* of these parts.) When some relief has been obtained by the bleeding and the opening ball, the animal's strength might be recruited with a little good gruel; but nourishment must be thrown in sparingly, until the inflammation is completely subdued. One dose of opening medicine is sufficient, and generally necessary, to restore the stomach and bowels; more than one may do much harm. No other treatment is necessary. Some time should be allowed for the recovery of strength. It is often a long time indeed before a horse recovers from such attacks; and sometimes the violence of the exertion has been such that the horse never perfectly recovers,

however carefully he may be treated. Whenever the feet appear to be affected, the shoes should be taken off, the soles pared, and the feet kept cool and moist with bran poultices. In this case also a dose of physic is proper. Sometimes, as the constitutional symptoms abate, the feet become violently inflamed. This disorder will be considered in another chapter.

Acute Inflammation of the Feet.—Acute Founder of the Feet.—Chill in the Feet.

This is almost always a concomitant symptom, or a consequence of the preceding disorder, and rarely occurs unaccompanied with muscular exhaustion. The feet are so violently inflamed that the hoofs separate, and even the feet have mortified and sloughed off as high as the fetlock joint. In this case bleeding until the horse faints is the grand remedy, and soon after the opening ball may be given. The blood however in this case should be first drawn from the toes of the affected feet, in the manner I shall soon describe, and if a sufficient quantity cannot be thus taken, the horse should be bled also in the neck. Previously to bleeding in the toe the shoes should be taken off, and the soles pared as thin as possible, and the crust shortened in proportion. A transverse incision is then to be made in the bottom of the foot, near the toe, with a small drawing knife, so as to produce a

large stream of blood. The foot should be then suffered to bleed until it stops of itself. Both feet, or all four feet, when they happen to be all affected, which is sometimes the case, are to be thus treated, by which means sufficient blood can generally be obtained for one time, if the operation is properly performed; if not, it must be taken from the neck vein; and should a repetition of the bleeding be necessary, which may be the case, the neck is the part from which it must be taken. Blistering the legs has been recommended, and scarifying the cartilages, but they are both improper. If the treatment I have recommended is seasonably and carefully pursued, the proprietor may stand a chance of effecting what hitherto has been rarely accomplished—a radical cure of the disorder. When this has been done the horse should be turned to grass and allowed a long run.

Acute founder in the feet sometimes attacks with such violence, that irreparable mischief is done before any remedies can be applied. In such cases bloody ichor is effused under the sole and hoof, and breaks out at the coronet, and sometimes even the hoofs are thrown off. The inflammation and pain are sometimes so great as to destroy the horse, and if he recovers he is almost always incurably lame.

CHAPTER XXX.

LOCKED JAW.

This dangerous and often fatal disorder is most commonly caused by punctured wounds of the foot, such as pricks in shoeing, or stepping on a nail in the streets. Sometimes it happens after docking, nicking, or gelding; but seldom till two or three weeks after the operation. So it is when it is caused by punctured wounds, which are generally in a healing state or nearly well, before the locked jaw takes place. According to Gibson it is sometimes caused by botts in the stomach. I have seen two cases which were evidently caused by the irritation of worms in the bowels. It may be produced by violent exertion; and I have seen a case where it took place in consequence of severe punishment in the riding school. In the latter stage of stomach-staggers the jaws are sometimes locked, and the disease sometimes comes on when no cause can be assigned for it. The symptoms are spasm or cramp of the muscles of the jaw, which prevents the horse from opening his mouth, or if he is able to open it a little, it is not sufficient to enable him to feed or masticate, though he generally appears to have a good appetite. The disease gradually increases, and the spasm or cramp extends to the muscles of the neck,

back, and limbs, so that when the animal is made to walk, he appears as if all his joints were stiffened; his nose is poked out, his ears and tail erect, and sometimes his eyes are distorted. The nostrils are generally expanded, and the breathing often disturbed. On the first appearance of the disorder the horse often seems to ail little, but neighs upon any one entering the stable, and seems eager for his food; in the latter stages, however, the cramp is so general and so painful, that it is distressing to look at the animal. Opium and camphor are generally considered the most effectual remedies for locked jaw, and when the mouth is so close, or the power of swallowing so diminished, that medicine cannot be introduced into the stomach, it is thrown up as a clyster.

A late writer, Mr. Wilkinson, has published an account of twenty-eight cases of locked jaw, twenty-four of which he cured; but in all the successful cases, the jaws were sufficiently open to admit of medicine being given, though with difficulty, while in the four fatal cases they were so close as to prevent any medicine from being introduced. Mr. Wilkinson first gives a purgative and an emollient clyster; he does not bleed unless the pulse points out the propriety of that evacuation. He directs the jaws and all other parts affected with spasm or cramp, to be well embrocated with a mixture of oil of turpentine, olive oil, liquid ammonia and mustard, and afterwards covered with fresh sheep skins, the flesh side inwards; which

must be continued and changed as often as is necessary, so as to keep up a constant perspiration from the parts. After the operation of the purgative he gives a drench composed of opium, camphor, and assafœtida, one dram of each or more according to the occasion, and throws up a clyster composed of the same ingredients with a decoction of rue. If the disease continue, and the horse become costive, the purgative and emollient clyster are repeated, and the opium, &c. discontinued until the effect of the purgative has ceased. Mr. Wilkinson appears to have been very diligent and patient in the treatment of this disorder, and not discouraged, as we too often are, by the difficulties that occurred. It was generally found necessary to continue the treatment three, four, or even five weeks, before the disease was subdued. As a further encouragement to future patience and perseverance in the treatment of this dangerous disorder, I shall notice a case related by Gibson, from which it appears that not only medicine, but nourishment also, may be administered in the form of clysters. "The horse was seized rather suddenly with this kind of convulsion (locked jaw), which was first observed as he was leading out to water in the afternoon. He came reeling along with his nose turned out, his eyes fixed and immovable, with all the other signs that usually attend this disorder; and when he came to the trough could not reach the water because of the cramp and stiffness in his neck, and when it was

held to him in a pail he could not drink, though he showed an eagerness for it; his mouth being shut up so close that it was scarce possible to put a knife between his teeth. We found it impracticable to administer any kind of medicine, till by rubbing his cheeks, jaws, temples, and his whole neck for a considerable time, we made a shift, with great difficulty, to thrust down part of a calomel ball on the end of a small stick, and then to pour into his nostrils a very small portion of a strong cephalic drink; thinking by that means to convey the ball downward into his stomach, which, however, had but little effect, any further than this, that he had not such sudden fits and agitations as I have seen in others in the like circumstances, but continued more quiet; neither did his fever increase as usually happens when the disorder is gaining ground. But all this while his mouth continued so much shut that he could neither eat nor drink for three weeks, only by continually rubbing his jaws and neck, he would sometimes make a shift to suck about a handful of scalded bran, or sometimes a little oat-meal moistened with warm water, but in so small a quantity that it is possible he might have starved, had not other methods been taken to keep him alive. I have often observed that the forcing the jaws open by violent means puts a horse into such agonies that it rather increases than abates the symptoms, and therefore I contrived to give him both his food and physic by the fundament, through a pipe fourteen inches long; by which he

seemed to receive great benefit, for we could perceive the symptoms abate daily. His flanks grew more quiet, he stood more still, and free from sudden fits and startings, all which symptoms are usual in the increase and continuance of this disorder. The clysters were made in the following manner: rue, pennyroyal, and chamomile flowers, of each a handful; boil in two quarts of water for ten or fifteen minutes in a covered vessel, then add the other ingredients, the castor and assafœtida, cut up in small pieces and tied up in a rag; still keep it over the fire for about ten minutes longer, then strain off the liquor, and add of linseed oil, and treacle, of each four ounces, and half an ounce of unrectified oil of amber.

"This clyster was repeated once a day for a fortnight; and, by way of diet, was given every day three or four quarts of milk boiled with oatmeal and water, a bag with a long pipe being left in the stable for that purpose only. He retained every thing that was administered that way, which the guts appeared to suck up, their natural motion being inverted for the purpose: and as he scarcely ate more in three weeks than was sufficient to support him one day, there can be no doubt that he derived much nourishment from these clysters. He had two men constantly to look after him, who had orders to rub his whole body often, which greatly helped to relax his skin and remove the crampiness of his muscles: and although he had not for the first fortnight recovered the use of his jaws, yet we observed him daily to move with less

stiffness, and often to lick the manger as if he craved for food. He also breathed with less difficulty, and had several other good signs. I now determined to try the effect of an opium clyster, which I thought might be of service to remove the contractions of the muscles about his mouth and jaws, which all this while continued in some measure obstinate, and without some powerful relief might prove fatal. Therefore I dissolved half an ounce of crude opium in one of his clysters, which was followed with these circumstances—that the horse soon lay down, he began to point his ears backwards and forwards, and could move his neck pretty freely, and his mouth was so far at liberty that he took his drinks with little or no difficulty, and could eat hay and bran sufficient to sustain him. He likewise moved his whole body so readily that we could walk him an hour every day. That I might follow up this good effect of the opium clyster, I gave him some days after 1 oz. of Matthew's pill, which contains about 2 drams of opium, and the same quantity of assafœtida. This was given by the mouth, in a ball, and repeated the following day. He now recovered daily, and took his drinks only twice a week; and as soon as he recovered his flesh was gently purged, after which he got perfectly well."

Gibson attributes this disorder to the irritation of botts, or other worms in the stomach. He disapproves of purgatives (either as drenches or as clysters) and bleeding. The drink he speaks of was made by boiling a handful of rue, pennyroyal,

and tobacco in a quart of forge water, and letting the decoction stand constantly on the ingredients: of this two or three hornfuls are given once in four hours. Modern practitioners do not reckon botts among the causes of locked jaw, which is most commonly brought on by the causes before noticed. The great benefit derived from the opium clyster should be carefully recollected. Mr. Wilkinson examined four horses that died under his care, and found the pia mater of the spinal marrow inflamed, and the marrow itself of a dark colour. The pia mater of the brain was likewise inflamed in a slight degree. When locked jaw comes on after docking or nicking, he applies fomentations to the tail, and afterwards dresses the wound with digestive ointment. I cured one case of locked jaw by blistering the back from the withers to the tail, and giving opium and camphor—which we found great difficulty in giving. Every now and then a little gruel was given: by persevering in this treatment the jaws gradually relaxed, and in twenty-four hours the horse was able to eat hay.

CHAPTER XXXI.

WARTS, AMBURIES, WENS, ENCYSTED TUMOURS.

The common method of removing warts, amburies, &c. is to tie strong silk or twine round them: but it is always better to cut them off with a knife, in whatever situation they may be. Some

farriers touch them with arsenic, mixed with a little soft soap; but this is a dangerous method, and often produces a serious degree of inflammation and sloughing.

Farriers generally endeavour to get rid of wens by blistering; but this never answers: and sometimes they use arsenic and soap; but this is not only very dangerous, but generally ineffectual also. The knife is the safest, most expeditious, and most effectual remedy for wens, and every kind of encysted tumour. When a considerable artery is opened in cutting out a wen, the bleeding may be stopped by tying it, by means of a tenaculum, or a crooked needle, or the bleeding vessel may be laid hold of by a pair of forceps and tied.

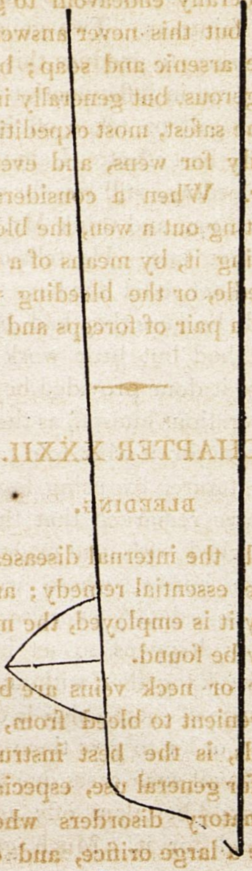
CHAPTER XXXII.

BLEEDING.

In almost all the internal diseases of the horse bleeding is the essential remedy; and the earlier and more freely it is employed, the more effectual will it generally be found.

The jugular or neck veins are by far the best and most convenient to bleed from, and a lancet, in skilful hands, is the best instrument; but a fleam is better for general use, especially in those highly inflammatory disorders where it is necessary to make a large orifice, and draw off the

blood in a large stream. I have here drawn the size and form of a fleam, which I think the best for a horse; those generally kept in the shops are of a bad form. The shank or stem of the fleam, should



be substantial, not less than the 12th of an inch thick; but the blade, or bit, cannot be too thin or too keen. The quantity of blood generally drawn in inflammatory disorders is too small. It should always be carried so far as to weaken the pulse and bring on faintness. Two gallons may sometimes be necessary to produce this effect; and in mad staggers, and in inflammation of the heart, I have seen four gallons taken off in the course of an hour with the best effect. I am no advocate for unnecessary bleeding, still less for unnecessary or superfluous feeding, and think Mr. Taplin's story a very instructive one. He tells us, a coachman requested his master to let him have the horses bled and, physicked, because they had been upon high feed, and had had but little work: he was permitted to have it done provided he would submit to the same operations himself, as there was exactly the same reason for it; but told to avoid the expense for the future, by using less food or more exercise. I have remarked that the horses most frequently attacked with mad staggers are gentlemen's carriage horses, whose work sometimes amounts only to salutary exercise; and if wet or slippery weather happens to set in, do no work perhaps for a week together, without any reduction in their allowance of oats, which is often excessive, or unlimited, in order to give them a sleek and fat appearance. In all such cases one half the allowance of oats should be taken off; and a cold bran mash substituted for it. Much good, however,

may be done by bleeding, not only at the commencement of a disorder, but when it appears to be approaching; which is known by dulness, redness of the eyes, languid appetite, and unwillingness to work.

I have often had occasion to animadvert on the cruel manner in which horses are generally worked, and the imprudent manner in which they are fed with hay; but the error in feeding I am now considering, that is, giving an excessive quantity of oats and too little exercise, is not so often occurring. (See *Feeding.*)

Topical or local bleeding is frequently recommended, and the only part where this is really useful is in the foot; or bleeding in the toe, as it is commonly termed. It is not unlikely that in strains of the leg, or coffin joint, bleeding freely in the toe would be found more useful than bleeding from the neck. Bleeding from the temporal artery has been thought more effectual in staggers than bleeding from the neck. I have certainly seen a horse restored by this operation after bleeding from the neck had failed; still it cannot be considered as topical bleeding, as the temporal artery is not distributed to the brain. (See *Staggers.*) Bleeding from the angular, or eye vein, as it is termed, is sometimes practised in inflammation of the eye; but does little or no good. Bleeding in the plate vein is in no respect preferable to bleeding in the neck: nor is there any advantage in bleeding from the thigh or kidney vein. Bleeding

in the mouth is certainly of no use; and I have lately heard of a horse bleeding to death from the artery of the palate having been opened instead of the vein. I once saw an accident of this kind, and it was found necessary to bind on a compress of tow upon the orifice to stop the bleeding. Scarifying the conjunctiva in ophthalmia is injurious. Pinning up the vein, as it is termed, to stop the bleeding is often done carelessly, and a sore neck is sometimes the consequence. It is not unlikely that the wound is sometimes inadvertently poisoned by bleeding with a dirty fleam, or by pinning up the vein with dirty fingers that have been about the heels of a greasy horse, or the nose of a glandered horse, or that have been using blistering ointment. Probably any thing which causes an itching in the part will tempt the horse to rub himself and produce inflammation, which may extend even to the vein, and from thence to the heart. Most commonly, however, it spreads upwards, causes a swelling of the parotid gland or vives, and terminates in the loss or obliteration of the vein. I have known the great nerve of the neck injured by bleeding too low down in the neck, and striking the fleam perhaps with greater violence than was necessary. The horse died about 12 hours afterwards. The proper situation for bleeding is about four inches from the part where the vein divides into two branches. Farriers sometimes tie a cord round the neck in order to raise the vein; but this is unnecessary, and may do mischief, especially in

cases where the brain is already loaded with blood. I once observed the vein of a cow that had been thus prepared for bleeding; the farrier failed in his attempt to open the vein for several minutes, and the cow became very troublesome. The vein was so dilated with blood that it was as large almost as a man's wrist; I then opened it myself and it bled, as may be supposed, very freely. Had not the vein yielded to the blood as it did, the vessels of the brain would probably have been ruptured. Some people have a custom of bleeding their horses every spring; and when at this period they appear to be rubbing themselves, and have an unusual redness under the eyelids, I believe it does good. Such occasions, however, for bleeding would seldom happen, were feeding, exercise, and grooming properly attended to. When blood has been drawn it should be set aside for examination; if, after it has coagulated, a buff-coloured jelly is found on the surface, it denotes an inflammatory state of the body, and the blood is said to be sizey. Such an appearance should satisfy the practitioner that bleeding was necessary; and if the jelly is firm, and not easily broken, it shows that the operation may be freely repeated, if the disorder has not been subdued by the first bleeding. Sometimes the blood after it has coagulated, will be found with a great deal of this buff-coloured jelly on it, but at the same time it will be thin and watery; this indicates great debility and a tendency to dropsy.

In such cases a little green food is the best remedy; and a large cool box, or a sheltered field, the best situation.

CHAPTER XXXIII.

PHYSIC.

The usual time for physicking horses is at the time or soon after they are taken up from grass, or the straw yard, and during that when they are getting into condition by suitable feeding and exercise, three doses are generally thought necessary. There is no foundation, I believe, for this opinion; for when horses are brought gradually from green food and the open air into a stable diet and temperature, they bear the change very well. It is not often, however, that horses have all the care and attention paid them that are necessary on such occasions, and therefore two or three doses of mild physic generally do good; probably preventing illness and promoting condition. Physic is useful when a horse appears heavy and feeds badly, and especially if the eyes and mouth are of a yellowish colour. A horse should be kept chiefly on bran mashes for two or three days before he takes physic. The ball should be given him after fasting a few hours, and no food should be given till two or three hours after he has taken the physic. He should then have a bran mash and a little warm

water, and in the afternoon another and some warm water. In the evening another bran mash and one or two pounds of hay, with a little warm water. Next morning the horse should be exercised, with cloathing according to the season and weather; and on his return from exercise he should have some warm water and a bran mash. The physic will now begin to work, and its operation must be promoted by a repetition of the exercise, warm water, and mash. About the afternoon a little hay may be given, and some warm water. In the evening a mash and warm water: at night a little hay. The following morning a small quantity of oats may be given: still the water must have the chill taken off, and only a small quantity of hay should be given; but to compensate for it one or two bran mashes. The horse may on the fourth day be brought to his usual diet. There should be an interval of a week before another dose is given. When a horse is weak, or low in flesh, a handful or two of ground malt or ground oats may be put into each mash. When the physic makes a horse sick, and does not operate at the usual time, that is the morning after it is given, and especially if he appears griped or in pain, throw up a clyster, and give him a little exercise, which will make the physic work and relieve him. If the physic works too violently, or continues its operation too long, it must not be checked by astringents or cordials; but by giving arrow-root gruel now and then, and if arrow-root cannot be

had, some fine wheat flour must be substituted for it. This will almost always be found to be effectual; but should it prove otherwise, give a tea-spoonful or two of tincture of opium in a little warm water.

Purging Ball, or Physic.

Take of Barbadoes aloes from 5 drams to 1 oz.
Ginger .... 1 to 2 drams.
Oil of carraways .... 20 drops.
Castile soap .... 3 or 4 drams.
Syrup enough to form the ball.

Five drams of aloes, when the horse is properly prepared, is generally sufficient for a saddle horse of moderate strength; six drams will almost always be found sufficient. Horses are sometimes met with that will take the full dose; but the most prudent method is to begin with the smallest dose. Many horses have been destroyed by taking too strong a dose of physic. It is necessary to take care that the Barbadoes aloes are genuine, and not a black shining kind of aloes, called melted or strained aloes, which is too often sold for them, and cannot be depended upon, though, from their appearance, they may be thought finer and purer. Succotrine aloes are uncertain in their effect, and should never be employed. Cape aloes are still more uncertain; and it is not improbable that this cheap kind of aloes is sometimes manufactured into succotrine, and melted or strained aloes. (See vol. ii.)

CHAPTER XXXIV.

OPERATIONS.

Clysters.

THIS useful and innocent mode of exhibiting medicine is too much neglected, and when employed is frequently done in a slovenly and ineffectual manner; that is, by means of large syringes. The best apparatus is a pewter pipe, about 14 inches long, and an inch in bore: they may be purchased at Mr. Long's, veterinary instrument maker, Holborn, London. To this pipe a large pig's or bullock's bladder should be firmly tied. An opening clyster is made by mixing a handful or two of salt with four or five quarts of warm water: to this a little hog's lard or sweet oil should be added. Linseed tea, or thin gruel, with a little treacle or sugar, makes a good emollient clyster. And an anodyne or opiate clyster is made by dissolving from one to three or four drams of crude opium in three or four pints of warm water. This last kind of clyster is employed in locked jaw, especially when it is found impossible to give medicine by the mouth. In this case nourishment must be given also in clysters. Nourishing clysters are made of broth, milk, rich gruel, and sugar. It was observed by Gibson that when nourishing clysters are given in locked jaw, they are sucked upwards by the bowels, and absorbed into the blood. He sustained a horse a considerable

time in this way. I have seen clysters sucked as it were upwards after the pipe has been withdrawn, which is evinced by the rumbling noise made in the bowels soon after, and the plentiful discharge of dung, evidently from the colon. The stimulus of a saline clyster in flatulent colic seems to be propagated by the nerves of the bowels, throughout the whole almost of the alimentary canal. In short I consider clysters as one of the most useful medicinal agents that our Materia Medica contains. (See vol. ii.)

Fomentations.

Fomentations are commonly made by boiling wormwood, chamomile flowers, bay leaves, rue, and elder flowers or leaves in water. Hemlock and poppy heads are used for anodyne fomentations. Warm water, probably, answers as good a purpose as any thing. In painful swellings, where there is great tension of the skin, a little salad oil may be a useful addition as a relaxant, or some fresh hog's lard. Fomentations should not be used so hot as to give pain, but should be continued for a considerable time, and frequently repeated; on this indeed their efficacy greatly depends: and on this account the emollient poultice is always preferable when the situation of the inflamed part is such as will admit of its being applied; for a poultice, when properly made and applied, may be considered as a continual fomentation.

Fomentations are applied by means of large woollen cloths, which are to be wrung out of the hot liquor and applied immediately to the part, so as to cover the whole of it completely. Another cloth is left in the hot liquor, to be in readiness when the first has become too cool.

Poultice.

The cheapest poultice, and perhaps as good a one as any, is made by pouring boiling water on a quarter of a peck of bran, so as to make a very thin mash; some linseed powder is then to be stirred into it, and a little hog's lard. When linseed powder cannot be had, some oatmeal or flour may be substituted for it. Boiled turnips make a good poultice, and may be improved by the addition of a little linseed powder. Poultices are generally too small, and confined, and too dry. They should be considered as a means of keeping water, mucilage, and oil constantly in contact with the inflamed part; it will then be evident that if they are not constantly moist in every part they cannot answer this purpose. In small horses the leg of a worsted stocking is a convenient thing for applying a poultice to the leg, the knee, or the hock; but in larger horses a flannel bag should be made for the purpose. In tying or confining a poultice to these parts, it is necessary to use listing, or a strip of flannel, instead of tying it with cord, which causes swelling, and may do much harm.

Blisters.

Before a blister is applied the hair must be cut off from the part as closely as possible: this may be much more easily and effectually done by means of shears than scissars. The blistering ointment is then to be well rubbed into the part with the hand; and after this has been continued about ten minutes, some of the ointment may be smeared on the part. In blistering the legs the tender part of the heel, under the fetlock joint, is to be avoided, and it may be better to rub a little hog's lard on it in order to defend it from any of the blisters that may accidentally run down from the leg. When the legs are blistered all the litter should be removed from the stall, and the horse's head should be carefully secured, to prevent his rubbing the blistered parts with his nose. On the third day he may have a cradle put about his neck, and be turned loose into a large box, or a paddock, or an orchard. In a field he would be apt to take too much exercise. About a week or ten days after the blister has been applied, the parts should be oiled with some mild oil, such as olive oil, or fresh-made neat's-foot oil. If flies are troublesome, and make the horse restless, they may be kept off by the tar ointment, or tar and train oil mixed.

Blistering Ointment.

No. 1.

Hog's lard .... 4 oz.
Oil of turpentine .... 1 oz.
Spanish flies, fresh and finely powdered, 6 dr.

Mix.

No. 2.

Oil of turpentine .... 1 oz.
Strong sulphuric acid, by measure .... 2 dr.

Mix in the open air, and stir them together. When the effervescence or boiling which will take place has ceased, add 6 oz. of melted hog's lard, 1 oz. of oil of origanum, and 1 oz. of fresh and finely powdered Spanish flies.

No. 3.

Olive oil, or any common oil .... 3 oz.
Oil of turpentine .... 1 oz.
Cantharides, finely powdered .... 6 dr.

Mix; and let it be well shaken before it is used. This should be named blistering liniment, and if well rubbed in for about ten minutes, will be found a very effectual preparation.

Firing.

The hobbles, or apparatus for throwing a horse down, and the manner of putting them on, is represented in plate 3. This plate represents also

the different methods of firing, or the different directions in which the lines are drawn with the hot iron. It shows also the curb and the bone spavin, with the fired lines upon them. Fig. 1 is the curb; fig. 2, the bone spavin; fig. 3, the most usual method of firing for strain of the back sinews, or fetlock joint; fig. 4, another method; fig. 5, the college method; fig. 6, the seat of mallenders; fig. 7, the speedy cut; fig. 8, that part of the swelling in bog spavin which gives it the name of thorough-pin; fig. 9, the seat of sallenders; fig. 10, the seat of bog spavin The firing iron is represented in plate 21, fig. 1; the hobble, fig. 2. The firing iron should have a smooth round edge, nearly as thin as the edge of an old shilling. The skin should never be penetrated; but the cuticle should be destroyed, and a dark-brown impression left on the skin, from which there will be a glutinous exudation soon after the operation, when the iron has been properly applied. The hair should be cut off from the part previously to the operation, as closely as possible. The hobbles having been placed on the pasterns in the manner represented in the plate, a long piece of webbing, with an eye made at one end, is to be placed round the upper part of the fore arm of the same leg on which the rope hobble is placed, then passed over the shoulder, to be held by one man, who may thereby direct the falling of the horse, and pull him down on the side required with more certainty. The horse being thrown down, if the

back sinew or fetlock joint is to be fired, the uppermost leg is to be kept straight by means of webbing passed round above the knee, and secured to the hind leg above the hock, and another piece of webbing passed around the pastern, and held out forward by an assistant. The under leg should be restrained in a similar manner; for though the horse's weight is a great restraint upon the shoulder, he is able to extend it beyond the straight line considerably. It is usual for a man to lie on the shoulder in order to keep the leg steady; but this should not be done unless there is a good bed of dung under him, which is much better than straw to throw a horse upon. In firing the hind leg for spavin, it will be the under leg; of course it should be taken out of the hobble, and drawn out by a piece of webbing, which should be held by an assistant; but, in firing the back sinews or pastern of the hind leg, the hind leg must be drawn forward towards the shoulder, by means of two pieces of webbing, one passed round the hock, and another round the pastern, and both secured to a collar put round the horse's neck. In this way the leg can be drawn forward towards the shoulder, and confined in that situation while the back sinews or pastern is fired. The same method may be pursued in securing the leg, to fire for spavin. As soon as a horse has been fired, the parts should have some blistering ointment rubbed on them, and the horse may then be turned into a loose box, with a cradle round his neck, and after a

fortnight he should be turned to grass, unless the disorder is of such a nature as to render this improper.

Rowels.

Rowels are seldom so convenient or so useful as setons. They are formed by making an incision in the skin, where it is rather loose, as in the chest, about an inch in length. This being done, the finger is to be introduced, or an instrument called a cornet, that is, the crooked end of a small horn made for the purpose, and the skin separated from the parts underneath all around for the space of about an inch. Into the cavity thus made a round piece of leather, with a hole in the middle, wrapped in tow and smeared with digestive ointment, is to be introduced. The orifice in the skin is then to be plugged up with tow, and kept there until suppuration takes place, that is, four or five days. The tow is then to be taken out, when a great deal of matter will flow from the orifice. The rowel is afterwards to be moved daily and kept clean.

Setons.

These consist of tape, threads, or lamp cotton passed under the skin, and smeared with digestive ointment. The instrument employed for conveying these under the skin is named a seton needle,

and may be purchased at the instrument makers. When lamp cotton is used, it can be withdrawn gradually, thread by thread, which on some occasions is desirable. Setons are preferable to rowels, being more convenient and equally efficacious.

Castration.

The best method of performing this operation is that commonly employed, and one year old is the best period. The horse being thrown on the left side, and the right hind leg drawn up to the shoulder, as described in the chapter on firing, the operator is to grasp the testicles with his hand, so that the skin over the testicle may be tense and easily divided, an incision is then to be made through the skin, about three inches in length, rather more than less. He is then to proceed gradually with his knife until a little fluid or water issues, by which he may be sure that the vaginal sac is opened. Into this opening one of the blades of a pair of scissars is to be introduced, and when this is done the vaginal sac is laid open with the scissars to the same extent as the incision in the skin. The testicle now comes readily out, and after a little time, when the cremaster or retractor muscle has relaxed sufficiently, the cord is to be placed between the clams, so that the whole of the testicle, with the epidydimis, may be outside the clams. The vas deferens may be divided before

the clams are put on; but this is of no importance, as their being included in the clams does not increase the pain. The clams must be made as tight as possible, or the cord will slip through the moment the testicle is cut off. When, however, the testicle is cut off with the nearly red hot firing iron, the same as is employed for firing, it is generally all the searing that is required; therefore if the cord does slip through it is of no consequence. This being done the other testicle is to be removed in the same manner. Whatever bleeding there may be after the horse gets up, it need not be attended to: it will always stop of itself within half an hour. No kind of dressing is necessary. The horse should be turned into a loose box for a week, and after that he may be put to work if required. The general fault of operators is searing too much, whereby instead of stopping or preventing bleeding they produce it, so that the horse bleeds considerably after the operation. If the cord is cut off with the hot firing iron, and not touched with the iron afterwards, it seldom bleeds at all. There is always some degree of swelling afterwards; but it is never of importance: if it continues, however, after a week, a few punctures should be made with a large lancet, in the lowest part of the swelling, when drops of water will fall from the punctures, and the swelling will gradually disappear. The clams are represented in plate 22, fig. 1.

Nicking.

This operation is now seldom performed; it consists in weakening or destroying the power of the flexor muscles of the tail. This is done by making two or three transverse incisions on the under part of the tail, through the skin and muscles. The horse should be thrown down for the purpose, or put into what is termed a break. The first incision should be about two or three inches from the origin or basis of the tail, continuing it from one of the sides where the hairy part terminates, to the other, and quite down to the bone, except in the centre, where the skin only should be divided. There are some, however, who go deeper than this, by which there is more bleeding. The second incision should be made in a similar manner, and three inches distant from the first, and so with the third. On making the second incision the ends of the muscles will protrude through the first, and must be drawn out with forceps, and cut off: the same with the second. This being done, it is usual to place bandages round the incisions, and then put the tail in what is termed a pulley; which may be seen in the stables of horse-dealers, and need not be described. The weight first applied to keep the tail up should be moderate, not exceeding three pounds: and it is necessary the following morning to loosen the bandages or cut them through on the back part of the tail;

by neglecting this precaution a serious and even fatal inflammation has taken place. In about three days matter will form, and then the bandages will fall off. They must on no account be forced off; but the loose ends may be cut off with scissors. A large gaping wound will then appear, but it requires no kind of dressing, and is generally completely filled up, and sometimes cicatrized in about sixteen days, or three weeks. About the third or fourth day after nicking, the weight employed to keep the tail up should be increased to six or seven pounds; and the transverse line upon which the pulley runs may be placed a little further back, so as to bring the tail a little over the back. After a week the horse may be led out for exercise, and if he carries his tail on one side, the pulley on the transverse line should be so confined as to draw the tail in a contrary direction, for a sufficient time to make him carry it straight. The time of keeping the horse in the pulley is from three weeks to a month.

Docking.

A convenient instrument for docking, or cutting off a horse's tail, is sold by Mr. Long, veterinary instrument maker, London. Colts should be docked even while suckers, as it generally renders nicking unnecessary. At this period the tail may

be cut off with a pocket knife: the bleeding which follows will do no harm; but if it cause any alarm the part may be seared with an iron, nearly red hot.

Cropping.

Cropping, or cutting off the ears, is an operation seldom performed. The ear is inclosed by a pair of clams, which is so inclined as to give the ear the form required. All that part of the ear without the clam is cut off by one sweep of a keen knife; no dressing is necessary after the operation, and the horse may be turned to grass until the ears get well. If the flies are troublesome apply some train oil with a little tar dissolved in it.

The Age of a Horse.

The age of a horse may be discovered by certain marks in the front teeth of the under jaw until he is eight years old, about which period they are generally worn out. An experienced person can, however, judge of a horse's age pretty nearly by the countenance and general appearance of the animal, as well as by the length of the teeth and form of the tushes. Between the second and third year a colt begins to change his sucking or colt's teeth, as they are termed, for permanent teeth, which are larger, and of a different form and co-

lour. The sucking teeth are small, and of a delicate white colour. When a colt is three years old, or between the second and third year, he changes his two front teeth, above and below; between the third and fourth year the two next then are changed; and between the fourth and fifth year the two next, or corner teeth, are changed. About the end of the fourth year, or a little later, the tushes appear. Mares have seldom any tushes. At five years old the horse has a full mouth of permanent or horse's teeth, and the corner teeth are those by which the age is ascertained after that period: they have a remarkable hollow or shell-like appearance when they first come up; but by the time the horse has completed his fifth year they have acquired some size, and look more like the other teeth. There is a cavity on their upper surface, at this period, of a dark or blackish colour. At six years old the cavity is much diminished, and at seven it is still less; at eight it has entirely disappeared, or if any mark remain it resembles rather the eye of a bean. The tushes at five years old have two concavities withinside them, converging upwards, and terminating in the point of the tooth: at six, one of those concavities is lost; that is, the one next the grinder: at seven, the other is diminished, but not quite gone: at eight it is generally gone, but not always: afterwards the tush gradually gets more round and blunt. These are the changes by which the horse's age is usually determined; but they are subject to variations, and

the only certain method of ascertaining the age, after six, is by a reference to the breeder. The length of the teeth is no criterion whatever; nor can the countenance be depended upon until the horse becomes very old and grey. The marks in the upper teeth have been thought to indicate the age: the marks in the two front teeth disappearing at eight, in the two next at ten, and in the corner teeth at twelve. (See Plate XIX.)

CHAPTER XXXV.

DIRECTIONS FOR MANAGING A HORSE DURING A JOURNEY.

Previously to setting off on a journey the horse should be brought into good condition by being worked out for two hours every morning, and fed as I have directed in the chapters on feeding and exercise. The feet should be carefully attended to, and if they are dry and brittle, the soles should be stopped a few days with cow dung, then pared rather thin, and for about a week before he begins his journey the feet should be kept stopped with tar ointment, which is then much better than clay or cow dung, and in the course of a week will considerably improve the quality of the horn, and tend in a considerable degree to cool the feet. This ointment is of great use also about the heels of the frog and coronet, especially when they are

dry and cracky. A horse had better be new shoed about the same time; for when it is done just before he sets off, the shoe may not fit exactly, or a nail may be driven too close, and the horse be found lame in consequence during the first or second stage. The saddle or harness should be carefully examined, as much inconvenience sometimes arises during a journey from saddle or harness galls. The most important thing to be attended to during a journey is the method of feeding, as, by improper management in this respect, not only great inconvenience and delay often arise, but sometimes the most serious diseases are the consequence. The hay should be examined, and the best that can be obtained should be given. It is usual not to limit the horse in hay: but leave that part of his diet entirely to the discretion of the ostler, who takes care to keep the rack full. If a horse travels every day from ten to twenty miles, one peck and a half of corn will not be too much for him, provided he has only about 8 lb. of hay, and the less hay he has the better; for by distending the stomach a morbid appetite is produced, which leads a horse to eat and drink much more than is proper for him, and this often proceeds to a depraved or voracious appetite, which leads him to eat even his litter. While I was in practice at Exeter, and attended the horses of commercial travellers, I met with numerous cases of cough, broken wind, gripes, and other diseases produced by this cause. So common indeed is the practice

of giving too much hay, that most horses have a greater appetite than in the natural healthy state; the capacity of the stomach having been increased by frequent distension, and the capacity of the lungs, or wind, not unfrequently proportionably diminished. When a horse comes in from a stage, the feet should be picked out and examined the first thing; and the common practice of tying up a horse at a stable door, and washing his legs, is not injurious if the horse is cool and has been walked quietly in; but he should never be taken to a river to be washed. The horse should never be put in a hot close stable, however comfortable it may appear, nor is a dark stable desirable, unless a horse is very tired, and then perhaps he lies down more readily. When there is no work for a horse he should always be taken out and have one hour's exercise, at least, early in the morning; he may then have his full feed without injury, and be perfectly fit for the work he is wanted for; but when this cannot be done, especially for two or three days, he should have less corn and some cold mashes. These few hints will perhaps be acceptable to the young traveller; and if any disease or accident happens during the journey, he will find it noticed in this volume.

CHAPTER XXXVI.

CRIB-BITING.

This, though only a trick or habit which a horse gets, and which he may teach another that stands next him, especially a young horse, may be considered as a disorder, because it renders him very liable to indigestion and flatulent colic. There is no doubt that in crib-biting a horse swallows air, and I have seen a horse distend his stomach and bowels with it in an enormous degree, and he would thereby often get the flatulent colic, and sometimes swell himself so that he could scarcely move. The only convenient method of preventing crib-biting is to put a leather strap round the neck, close to the jaws, which prevents him from laying hold of the manger; it may impede his feeding, however, and this must be attended to. A muzzle sometimes answers the purpose.

Halter Cast.

When the horse entangles his hind leg in the halter he often injures himself considerably; the heel is the part that generally suffers, and the only remedy required is wrapping up the part in a large emollient poultice, until the inflammation is completely removed: if any sore remains, the digestive

ointment, or goulard ointment, may be applied for a day or two, and then the astringent paste of pipe-clay and alum mixed with water.

Goulard Ointment.

Fresh hog's lard .... 1 lb.
Linseed oil .... 2 oz.
Palm oil .... 2 oz.

Melt over a slow fire, and when removed and getting cool, stir in 6 oz. by measure of Goulard's extract of lead. Continue stirring until it is perfectly cold.

CHAPTER XXXVII.

RHEUMATISM.

This disorder with a few others which follow it should have been noticed earlier; but, as there is a copious index, the omission is unimportant. Acute general rheumatism, or rheumatic fever, is inflammation of the muscular system, and has been already noticed under the head Founder, or Chill. There is, however, a different kind of rheumatic affection I have sometimes met with, in which the joints are affected; generally, I believe, the hock joint; but probably the other joints are equally liable to this affection. It is sometimes accompanied with a morbidly irritable state of the stomach and bowels, and if a strong or even a com-

mon purgative is given in such a case, there will be danger of its producing inflammation of these parts. The same irritable state of the stomach and bowels is sometimes observable also in chills, as they are termed, and when the hind leg is suddenly attacked with inflammation and swelling, after violent shivering and fever. In all such cases, though physic is often necessary, that is, when the bowels are in a costive state, yet it is likely to do great harm unless in a moderate dose, and guarded with cordials or opium. The following ball may be given on such occasions: it must be observed, however, that copious bleeding is the essential remedy, and must precede every other.

Purgative with Opium, or Cordial Cathartic.

Barbadoes aloes	4 to 5 dr.
Ginger	1 dr.
Hard soap	3 dr.

Syrup enough to form the ball.

The affected parts may be fomented and rubbed with some stimulating liniment or embrocation.

CHAPTER XXXVIII.

THRUSH.

This is another disease that should have been noticed earlier, and immediately after Grease, because the worst kind of thrush is that occasioned by the grease. It consists in a discharge of stinking matter from the frog, and considerable tenderness of the part and sometimes of the whole foot. In the fore foot it is sometimes brought on by the horse standing in the stable without exercise; and sometimes, indeed most commonly, it is produced by negligence in the groom, the frog becoming rotten from the filth of the stable. In the treatment of this disorder the removal of the cause must be the principal object; this, however, will not always be sufficient. After washing the frog clean all the rotten or ragged parts are to be carefully cut away, and the frog dressed with melted tar or tar ointment, covering it with tow that has been dipped in the melted ointment, and keeping in the dressing with slips of wood, named splints, passed from under the shoe across the foot. If the heels and quarters of the hoof are too thick and inflexible, they should be rasped, and the sole, if too thick, dry, or hard, should be made thinner, and stopped with tar ointment. The horse should have a dose of physic, and be kept on an opening diet.

If the thrush continues after this, apply a solution of blue vitriol.

By stopping a thrush in the fore foot suddenly by means of solution of blue vitriol, lameness is sometimes produced; when this happens, the foot must be poulticed.

CHAPTER XXXIX.

CANKER.

This is an obstinate disorder of the same part as the preceding, and generally proves incurable. It is a consequence of neglected thrush from grease, and often spreads from the frog to the sole, laminated substance, and coffin bone. If taken early the cure is not difficult; but when the coffin bone is affected, which is generally the case before the veterinary practitioner is consulted, it not only proves extremely obstinate, but generally incurable. At whatever period this disease is attended to, the first thing to be done is to remove completely all the horn by which the diseased parts may be covered; whether it be sole, frog, bars, or crust, not a bit is to be left, and rather too much taken away than too little. The whole is then to be washed with a saturated solution of blue vitriol, to which a small quantity of muriatic or nitrous acid has been added; it is then to be covered up with fine tow. This dressing is to be repeated daily, care-

fully removing every oit of horn that may appear detached or hollow, at each dressing, and scraping off the dead surface caused by the former dressing. If, on a careful examination with a probe, the coffin bone is found bare, it must be freely scraped. After continuing this dressing a short time, the peculiarly offensive smell of canker will be in great measure corrected, and a tendency or disposition to form horn will be observed. The shoe should now be applied, if there is horn enough left to nail it, and the foot kept tightly stopped with tar ointment. The disease must still be carefully watched, and the foot examined daily; for while it appears to be doing well in one part, it will often be creeping under the horn in another; success very much depends on this circumstance, and cutting away every bit of horn under which the disease may spread. Sometimes the cure appears not to depend on the application so much, or upon the variety of applications; any mild caustic, in such cases, will answer the purpose: but blue vitriol is the cheapest caustic, and with the addition before noticed generally strong enough. Any practitioner, I believe, may, by perseverance and attention, cure this disorder with the drawing knife, blue vitriol, and tow to make pressure with: but without perseverance and attention the disease will continue to prove, as it hitherto has done, incurable. Smiths sometimes cure this disorder: but they always make the horse incurably lame, by cutting and burning without distinction of parts.

They always, however, pay attention, and do not grudge labour; and if they now follow the advice I have given, they will cure the disorder in the way it should be cured, and make the horse useful again. I have known muriate of antimony (butter of antimony) employed with good effect.

CHAPTER XL.

POISONS.

We seldom hear of a horse being poisoned, though such circumstances are constantly occurring in giving them bad hay; which may truly be considered a slow poison, and does more mischief to horses than any other circumstance except immoderate work; and these are the two grand instruments of destruction with regard to horses. Horses are seldom poisoned by mineral preparations, such as sublimate or arsenic, as they can take a large quantity without injury, when their stomachs happen to be free from disorder; but the yew tree is a deadly poison to the horse, the ass, the cow, and the sheep. Four ounces of the leaves of the yew tree destroyed an ass in about half an hour. The only poisonous or venomous sting to which horses are liable, is that of the adder, which may prove fatal. According to Mr. John Lawrence there are small animals resembling mice, but with a snout like a hog, which some-

times bite, and their bite is venomous. I have never met with either of these cases, and therefore know not what treatment to advise. Probably bleeding and a dose of opium might be found useful; and rubbing the swollen parts with volatile liniment, or hartshorn and oil. (See *Inflammation of the Stomach.*)

Soap or liver of sulphur is as good an antidote as any to arsenic, or corrosive sublimate.

CHAPTER XLI.

CAPELET

Is a swelling on the point of the hock, from kicking. It never occasions lameness, and is incurable; therefore no expense should be incurred by fruitless attempts to cure it.

CHAPTER XLII.

CURB.

This is another disorder which should have been mentioned before. It is a swelling on the back part of the hock, about six or eight inches from the point, and is represented in plate 3, fig. 1. The only permanent remedy is firing and blistering immediately after. Blistering alone may, and certainly has, cured curbs; but the disorder often

returns, and the horse is obliged to be fired at last. I have a horse sent me this morning to be fired for a curb, that has been blistered three times for curbs, without benefit.

CHAPTER XLIII.

WOUNDS OF THE ABDOMEN, OR BELLY.

These should have been noticed in another part of the book; but as there is an index, and a methodical arrangement has not been attempted, it is of no importance. Wounds in the belly may happen in leaping over hedges, or pale gates, or may be inflicted by the horns of a cow. Sometimes the strong tendinous covering of the belly is ruptured, while the skin remains entire; the gut then protrudes and forces out the skin into a tumour. This is a rupture of the belly, and is thought incurable. I have known one very large rupture cured by cutting out a piece of the skin which covered it, and then sewing up the wound and supporting it with a bandage. In some accidents the skin also is divided, with its peritonæal covering; the gut then comes out, and the wound is of a very dangerous nature, still more so if the gut itself is wounded. The first thing to be done is to put the gut back, taking care to remove any dirt or other matter that may be sticking to it; for which purpose, should it be found necessary, it may be washed with warm water, nothing else. If

the gut cannot be returned, from its being full of air, and the opening in the belly too small to put it back again, that opening may be carefully enlarged to the necessary size. But if the animal can be thrown upon his back, conveniently, a great deal may be done that cannot be otherwise accomplished. After the gut is returned, the skin *only* should be stitched up; and a cushion of several folds of old linen and tow being placed on the wound, it should be kept in its situation by means of a wide bandage rolled round the body, and carefully secured. The animal should then be copiously bled, and have his bowels emptied by clysters. The only food he should be allowed is grass or bran mashes, and that only in moderate quantity.

CHAPTER XLIV.

ANTICOR.

French, *Anticœur*.—See *Dropsy*.

This is, I believe, an inflammatory disorder, and requires bleeding and opening medicines, with fomentations. It is said to happen frequently, and often end fatally, in France and Italy; but seldom in this country. It consists in a painful swelling of the breast and belly, sometimes ending in suppuration, sometimes in dropsy. After bleeding and opening medicine, give mild diuretics and grass.

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